# DVD RECEIVER

# MX2500D/78

Service
Service
**Service**

# Service Manual

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**CLASS 1**
**LASER PRODUCT**


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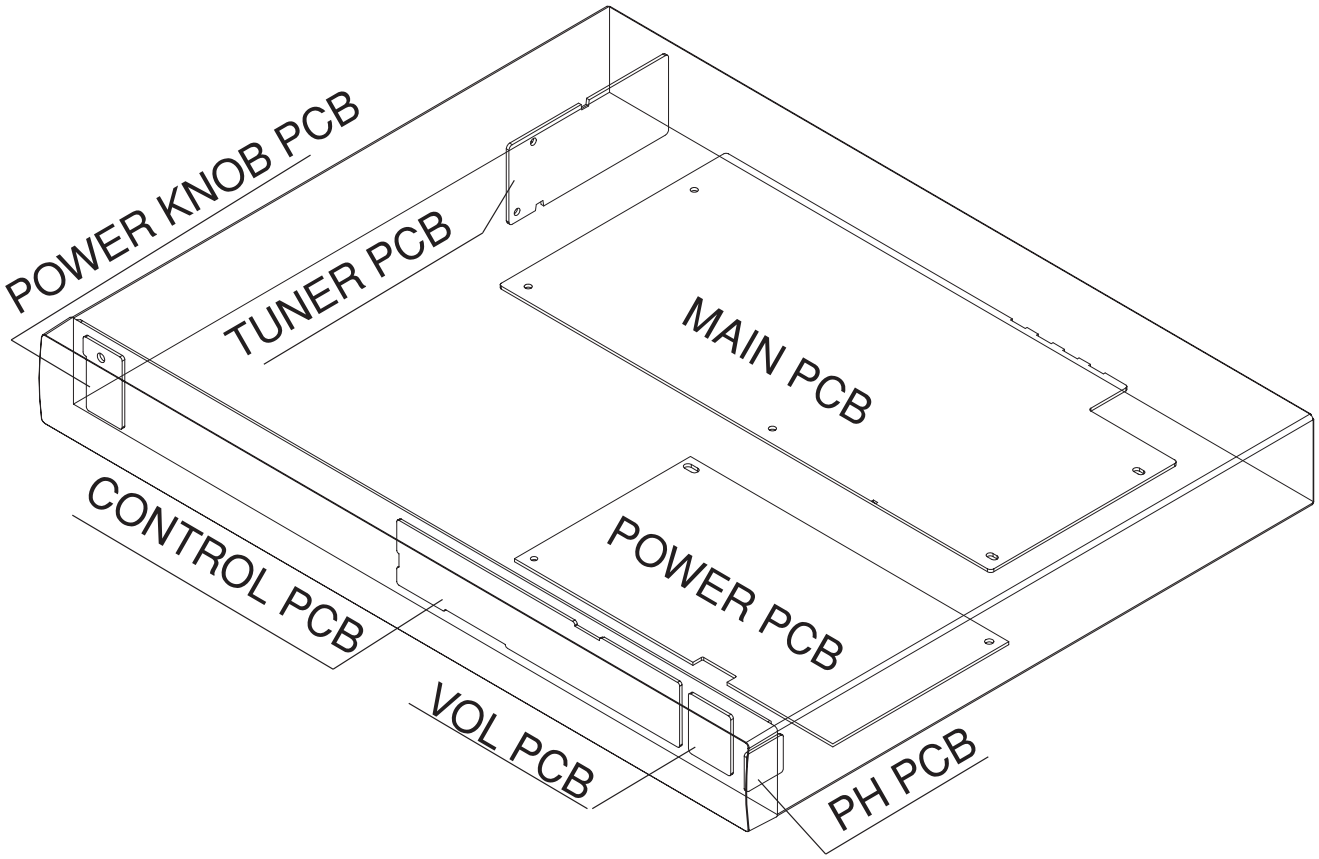
PHILIPS

## LOCATION OF PC BOARDS




## VERSION VARIATION:

| Type /Versions<br>Features &<br>Board in used: | MX2500D<br>/78 |
|---|---|
| RDS | |
| Rotary Encoder (volume control) | x |
| Aux Input | x |
| Digital Output | x |
| Line Output | x |
| Progressive scan | x |
| Power supply (110~230V) | x |
| | |

# SPECIFICATIONS

## AMPLIFIER SECTION

Output power ..... 200 W Total power
- Front ..... 30 W RMS / channel
..... 30 W FTC①/channel
- Rear ..... 30 W RMS / channel
- Center ..... 30 W RMS
- Subwoofer ..... 50 W RMS
Frequency Response ..... 180 Hz - 14 kHz / ±3 dB
Signal-to-Noise Ratio ..... > 60 dB (A-weight)
Input Sensitivity
AUX/TV In ..... 400 mV

① 8ohm, 120Hz-12.5 KHz, 10% THD

## TUNER SECTION

Tuning Range ..... FM 87.5 – 108 MHz
..... ( 50 or 100 kHz step)
..... MW 530 – 1710 kHz (10 kHz)
..... MW 531 – 1602 kHz (9 kHz)
26 dB Quieting Sensitivity ..... FM 20 dBf
26 dB Quieting Sensitivity ..... AM 5000 μV/m
Image Rejection Radio ..... FM 25 dB
..... AM 28 dB
IF Rejection Ratio ..... FM 60 dB
..... AM 24 dB
Signal-to-Noise Ratio ..... FM 55 dB
..... AM 40 dB
AM Suppression Ratio ..... FM 30 dB
Harmonic Distortion ..... FM Mono 3 %
..... FM Stereo 3 %
..... AM 5 %
Frequency Response ..... FM180 Hz – 10 kHz / ±6 dB
Stereo Separation ..... FM 26 dB (1 kHz)
Stereo Threshold ..... FM 23.5 dB

## DISC SECTION

Laser Type ..... Semiconductor
Disc Diameter ..... 12cm / 8cm
Video Decoding ..... MPEG-2 / MPEG-1
Video DAC ..... 10 Bits
Signal System ..... PAL / NTSC
Video Format ..... 4:3 / 16:9
Video S/N ..... 56 dB (minimum)
Composite Video Output ..... 1.0 Vp-p, 75 Ω
S-Video Output ..... Y - 1.0 Vp-p, 75 Ω
..... C - 0.286 Vp-p, 75 Ω
Audio DAC ..... 24 Bits / 96 kHz
Frequency Response ..... 4 Hz - 20 kHz (44.1kHz)
..... 4 Hz - 22 kHz (48kHz)
..... 4 Hz - 44 KHz (96KHz)
Digital Output .....
..... SPDIF (Sony Philips digital interface) Coaxial
- PCM ..... IEC 60958
- Dolby Digital ..... IEC 60958, IEC 61937

## MAIN UNIT

Power Supply Rating ..... 120 V-230V, 50 / 60 Hz
Power Consumption ..... 120W
Dimensions (w × h × d) ..... 435× 53 × 365 (mm)
..... 17.1 × 2.1 × 14.4 (inch)
Weight ..... 4.07 kg / 8.95 pounds

## SPEAKERS

Front/Rear speakers
System ..... 1-way, Bass Reflex system
Impedance ..... 8 Ω
Frequency response ..... 120 Hz – 20 kHz
Dimensions (w × h × d) ..... 90 × 92 × 87 (mm)
..... 3.5× 3.6 × 3.4 (inch)
Weight ..... 0.53 kg/1.17 pounds

## CENTER SPEAKERS

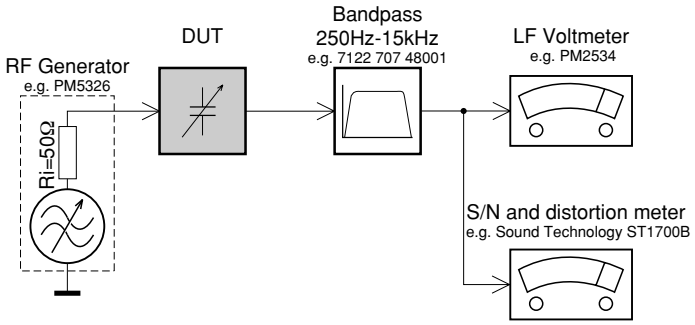
System ..... 1-way, Bass Reflex system
Impedance ..... 8 Ω
speaker drivers ..... 1 x 3 " C
Frequency response ..... 120 Hz – 20 kHz
Dimensions (w × h × d) ..... 90 × 92 × 87 (mm)
..... 3.5 × 3.6 × 3.4 (inch)
Weight ..... 0.53 kg/1.17 pounds

## PASSIVE SUBWOOFER

Impedance ..... 4 Ω
speaker drivers ..... 6 1/2" woofer
Frequency response ..... 30 Hz – 120 kHz
Dimensions (w × h × d) ..... 220 × 212 × 350 (mm)
..... 8.7 × 8.3 × 13.8 (inch)
Weight ..... 3.57 kg/7.85 pounds

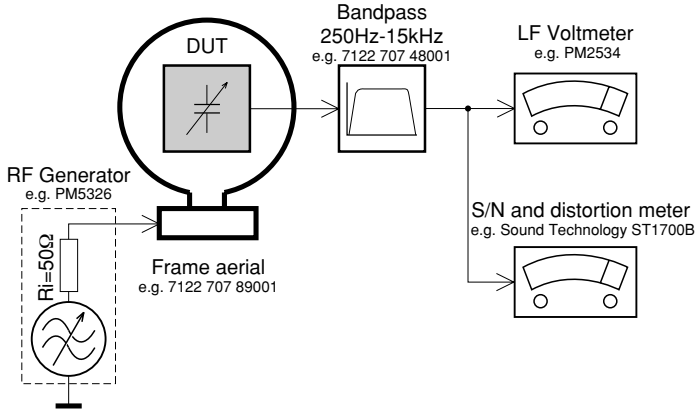
# MEASUREMENT SETUP

### *Tuner FM*




Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

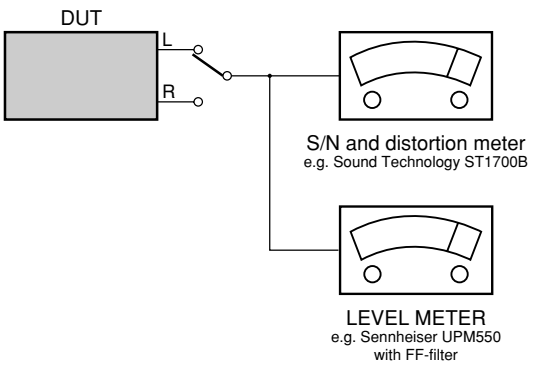
### *Tuner AM (MW,LW)*




To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

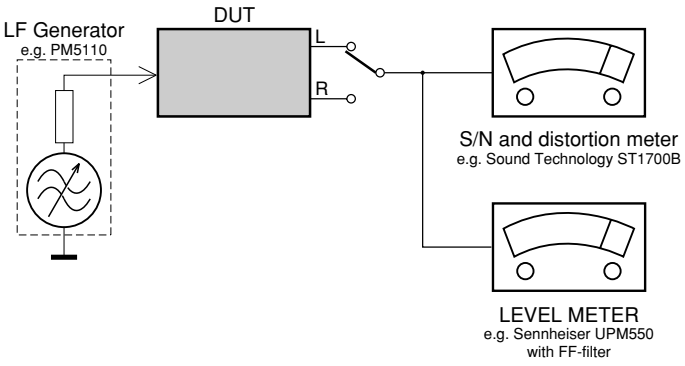
### *CD*

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)




### *Recorder*

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



# SERVICE AIDS

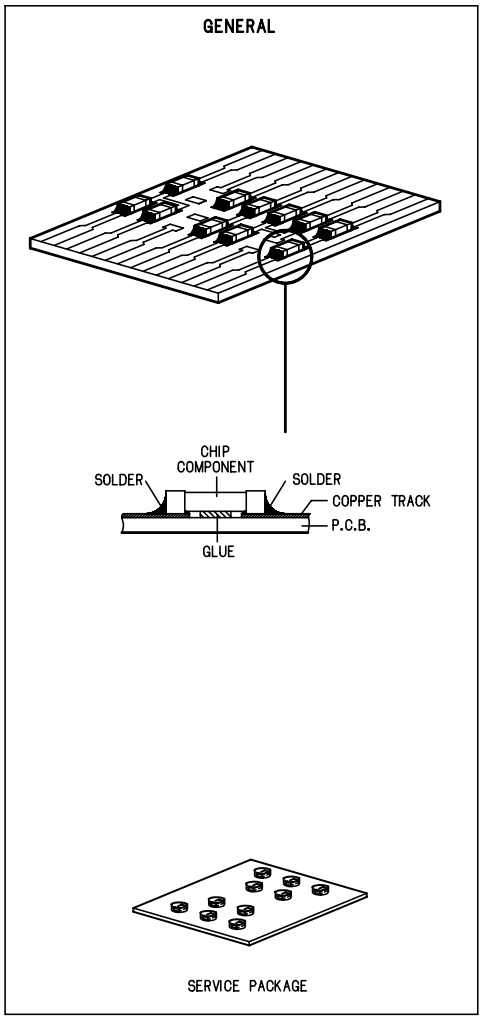
**Service Tools:**

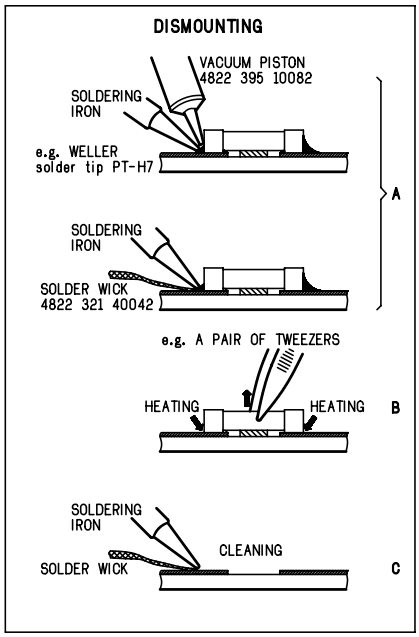
Universal Torx driver holder .....4822 395 91019
Torx bit T10  150mm .....4822 395 50456
Torx driver set T6-T20 .....4822 395 50145
Torx driver T10 extended .....4822 395 50423

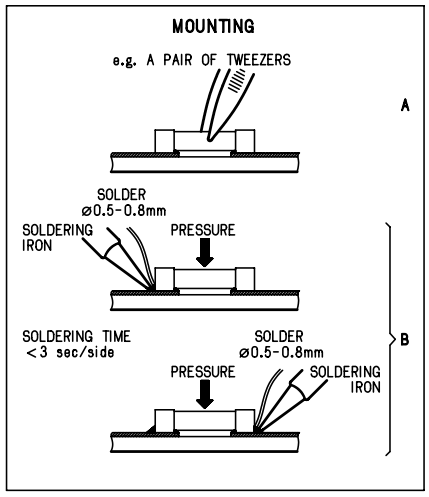
**Compact Disc:**

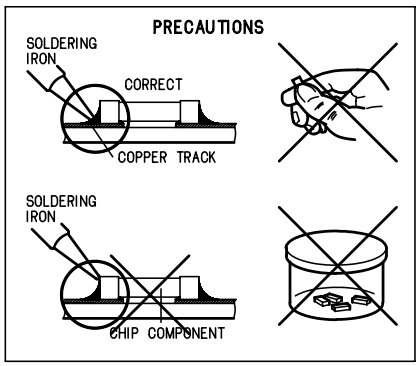
SBC426/426A Test disc 5 + 5A .....4822 397 30096
SBC442 Audio Burn-in test disc 1kHz .....4822 397 30155
SBC429 Audio Signals disc .....4822 397 30184
Dolby Pro-logic Test Disc .....4822 395 10216

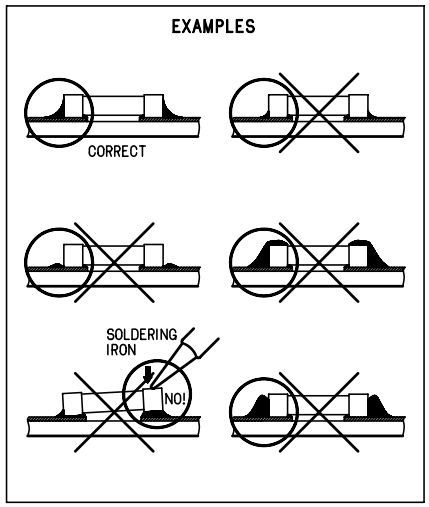
## HANDLING CHIP COMPONENTS



# ESD

**GB** **WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**NL** **WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**F** **ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**D** **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**I** **AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**GB** **ESD PROTECTION EQUIPMENT**

Complete Kit ESD3 (small tablemat, wristband, connection box, estention cable and earth cable ..... 4822 310 10671
Wristband tester ..... 4822 344 13999

**GB**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

Safety components are marked by the symbol ⚠ .

**NL**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

De Veiligheidsonderdelen zijn aangeduid met het symbol ⚠ .

**F**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

Less composants de sécurité sont marqués ⚠ .

**D**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

**I**

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenty di sicurezza sono marcati con ⚠ .

**GB**

After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist, The leakage current must not exceed 0.5mA.

**GB** **Warning !**

Invisible laser radiation when open.
Avoid direct exposure to beam.

**S** **Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**SF** **Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**DK** **Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

**F**

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

# System, Region code, Tuner, etc. setting procedure

## 1) System Reset

a) Press "SYSTEM" button on R/C. TV show "SETUP"
b) Select the menu using the "▼" and "►" button on R/C
c) Go feature setup page to do system reset

## 2) Region Code Change

After replacement / repair of the MPEG board, the customer setting and the region code may lost. Changing the Region code will put the player back in the state which it has left the factory.

Region Code

| | |
|---|---|
| 1 | USA |
| 2 | EU |
| 3 | AP |
| 4 | Australia, NZ, Latam |
| 5 | RUSSIA, INDIA |
| 6 | CHINA |

TV System

| | |
|---|---|
| 1 | NTSC |
| 2 | PAL |
| 3 | AUTO |

Menu/ Audio Subtitle (AS) Language

| | |
|---|---|
| 1 | English |
| 2 | English |
| 3 | English |
| 4 | English |

AFS

| | |
|---|---|
| 001 | LX3000D/LX3500D /MX2500D |
| 002 | MX3600D/MX3800 |
| 003 | LX3700D/LX3750W |

oem derivative

| |
|---|
| 08 |

- region code = 1 digit
- tv system = 1 digit
- "as/menu lang" = 1 digit
- "AFS" = "architechture Feature Set" = 3 digits

This field is used to define the architecture / features sets for each product.

- "oem derivative" = 2 digit

This field is use to define the OEM set. This will affect the background display.

Hence in total, reprograming will be done by way of the remote control. It should run as below :-

a) Put the player in stop mode. No disc loaded.
b) Press the following key on remote control:

For MX2500D/78 (LATAM) :
<PLAY> <159> <411> <001> <08> <PLAY>

✱ After the Region Code is changed it is necessary to reset the system so that the new Region Code will be fully effective. All customer setting will be lost.

✱ On top of the maximum number of times allowed for changing the region code is changed to 25.

✱ When the counter reach 25, you will not be able to further change the code until you reset the timer by the Region Code timer reset procedure

**CAUTION !**

**This information is confidencial and may not be distributed. Only a qualified service person should reprogram the Region Code.**

2-1

## 3) Region code change timer reset

Press below key to reset the timer :
a) In DISC source, stop mode and no disc in tray.
b) Press R/C "Play -159-PLAY" to reset timer to 25

## 4) Tuner area change

a) Press the "OPEN/CLOSE" button to open the set' s door
b) Press "1" "5" "9" button by using R/C.
c) TV Show "TUNER AREA"
d) Select the tuner area you want by using the "▼" and "►" button on R/C, then press "OK" to confirm. TV show " TUNER AREA CHANGED"
If you didn' t press it in five seconds, the system will remain original status.

| AREA | BAND | FREQUENCY (Hz) | | STEP (Hz) |
|---|---|---|---|---|
| LATAM (78) | FM | 87.5M | 108M | 50K /100K |
| | MW | 531K | 1602K | 9K |
| | | 530K | 1710K | 10K |

Note :-
Please refer to the above different tuner area.

## 5. Video Out Change

a) Press "SYSTEM" on R/C button
b) Select the menu using the "▼" and "►" button on R/C
c) Go picture setup page select Video out item.

## 6. Password Change

a) Press "SYSTEM" on R/C button
b) Select the menu using the "▼" and "►" button on R/C
c) Go feature setup page select "PASSWORD". TV show "ENTER CODE".Press 4 times of "STOP" button on R/C.
d) Select "PARENTAL" "8 ADULT" on TV.
e) Enter PASSWORD to "1234".
✱ "1234" is a default password supplied.

## 7. Checking on the Software version

a) Open the CD door.
b) Press "123" and "OK" on the remote control.
c) TV will show the version on screen.

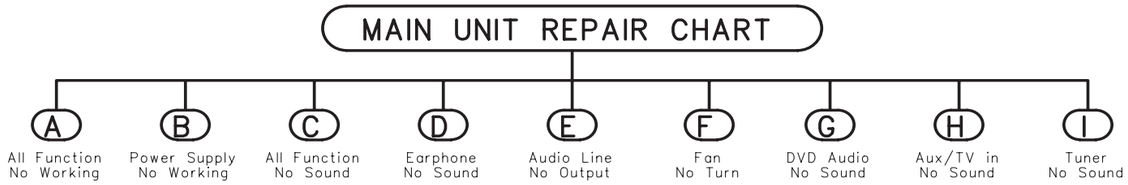
## 8. Upgrading new software

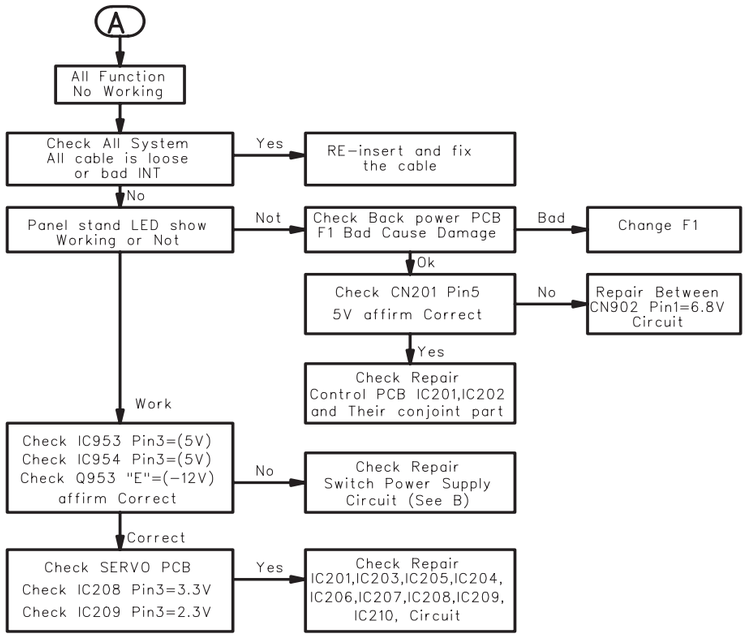
a) Open the door, then insert the CD-R program disc.
b) Close the door.
c) TV will show:-
- "disc loading"
- "bank30.rom"
- "writing" about 6 seconds.
- "Done"

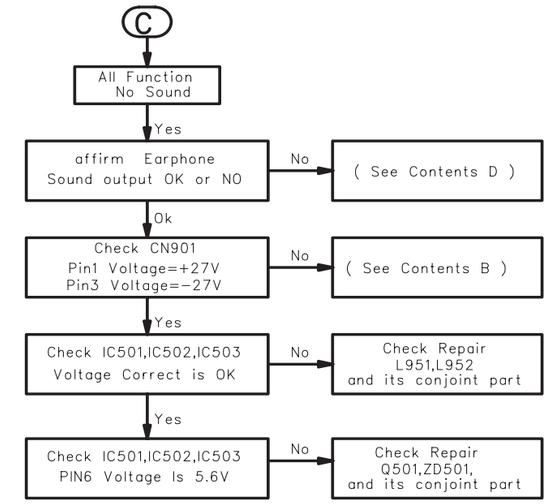
✱ The latest upgraded is in version VER0610.

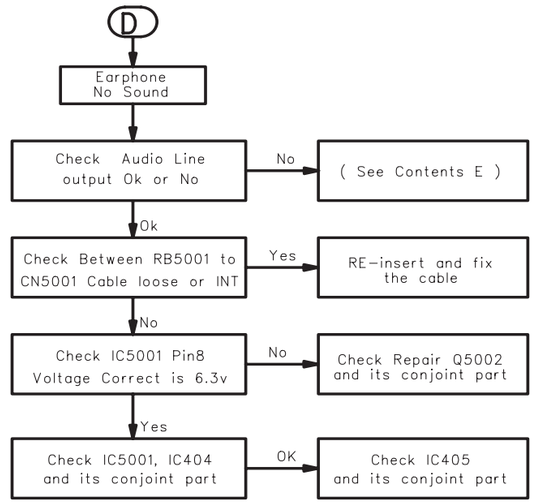
2-2

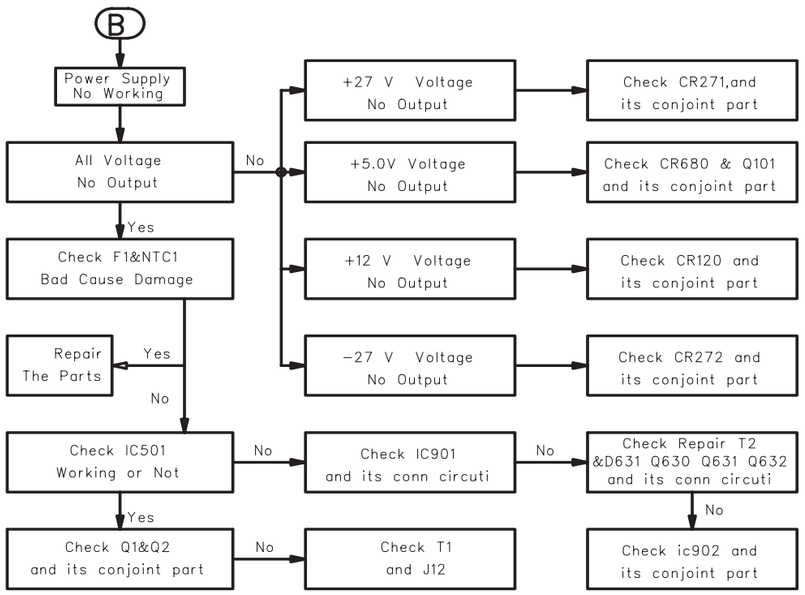
## REPAIR INSTRUCTIONS ( 1 of 2)

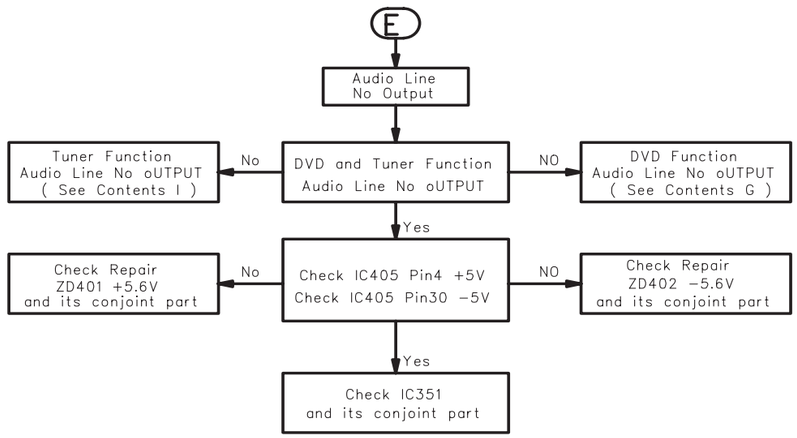


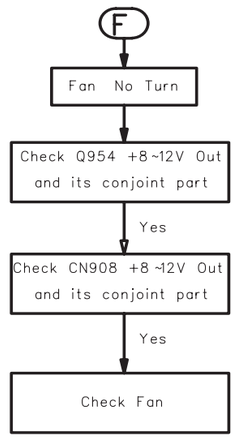



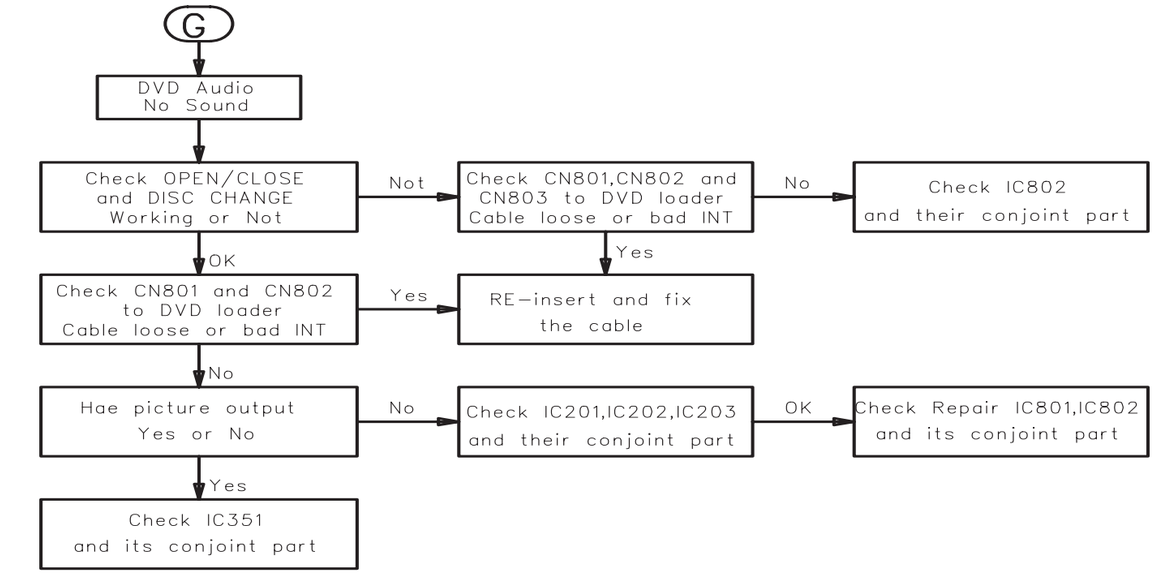



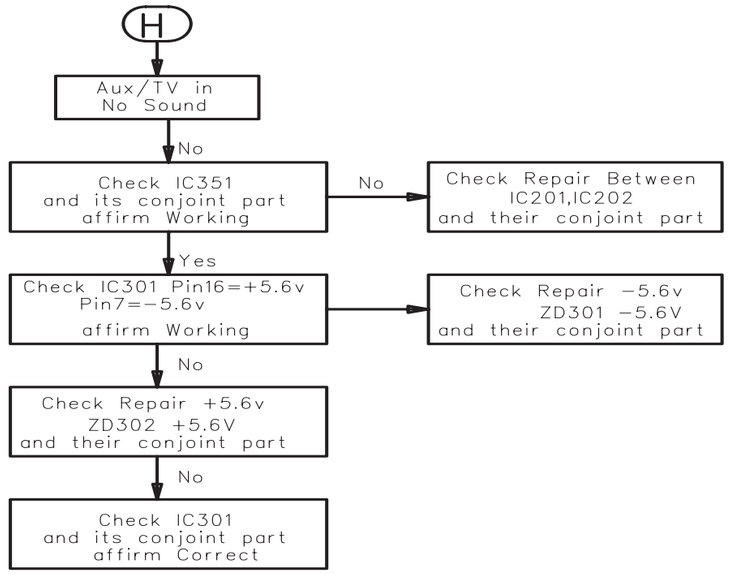



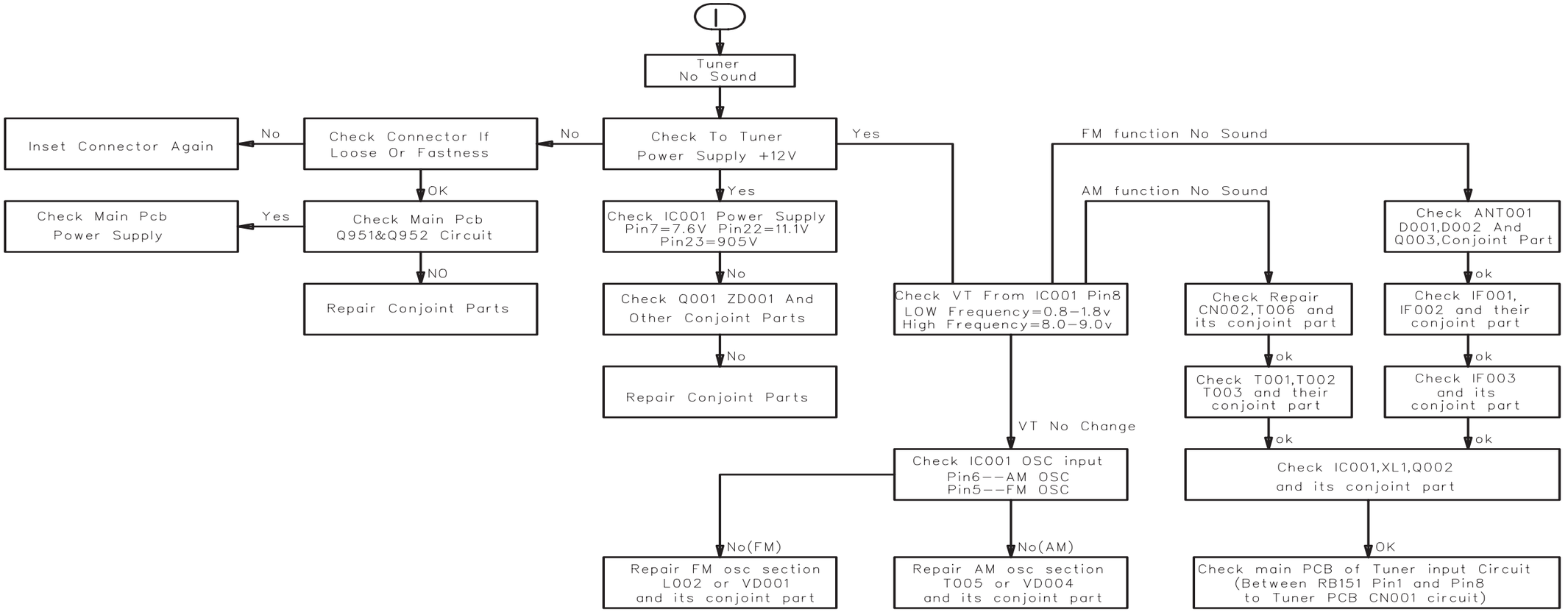



2-3

# REPAIR INSTRUCTIONS ( 2 of 2)



# DISASSEMBLY INSTRUCTIONS

### *Dismantling of the Front Panel Assembly*

1) Open the DVD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.

   *Note: If this is not possible, the DVD Tray has to be open manually.*

   Take a mini screw driver about 2mm diameter and make a marking 24mm from the tip as shown in figure 2. place the set on its side, insert the mini screw driver till the marking and slide it towards the right as shown in figure 1 until the Tray moves out of the Front Panel.

2) Return the set to its upright position and remove the Tray Cover as shown in Figure 3 and close the tray manually by pushing it back in.

3) Loosen 9 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
   - 5 screws on the back
   - 2 screws each on the left & right side

4) Loosen 7 screws & lift up the top edge of Front Panel assembly to free some catches before sliding it out towards the front.
   - 4 screws on the bottom
   - 1 screw "E" on the inside as indicated in Figure 8.
   - 1 screw each on the left & right side

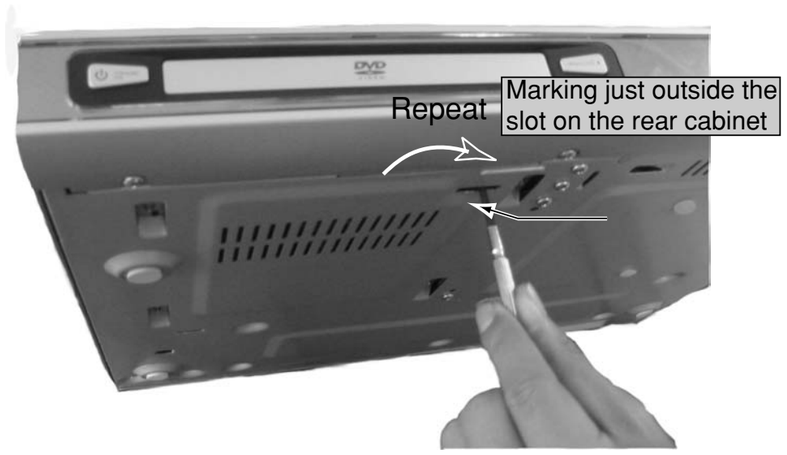



Figure 1

Figure 2

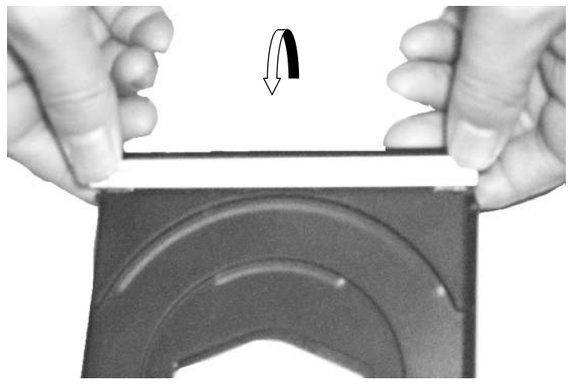


Figure 3



### *Dismantling of the DVD Module*

1) Loosen 4 screws "A" to remove the DVD Module as shown in figure 4.

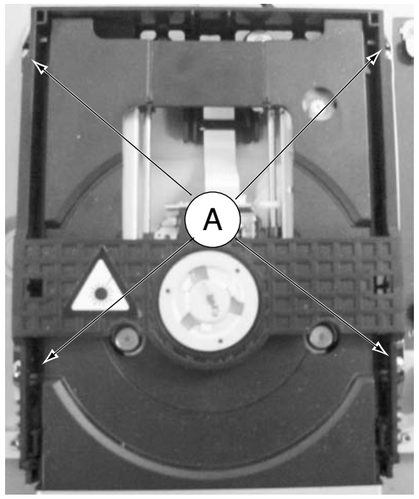



Figure 4

### *Dismantling of the Power Board*

1) Loosen 4 screws "B" at the top of the Power Board as shown in figure 5

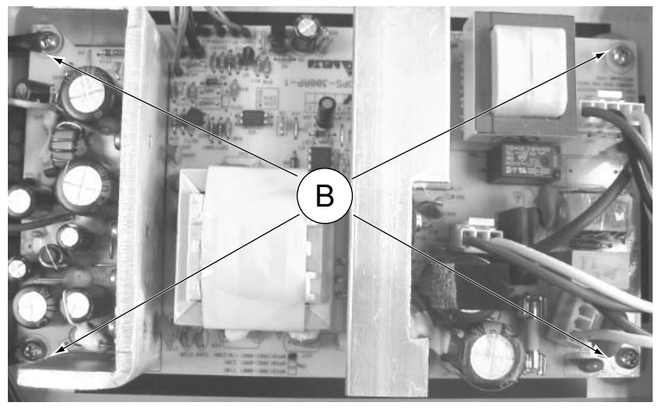



Figure 5

***Dismantling of the Tuner PCB***

1) Loosen 10 screw " C " at the back panel as shown in figure 7.

2) Loosen 6 screw " D " on the top of main board as shown in figure 8.

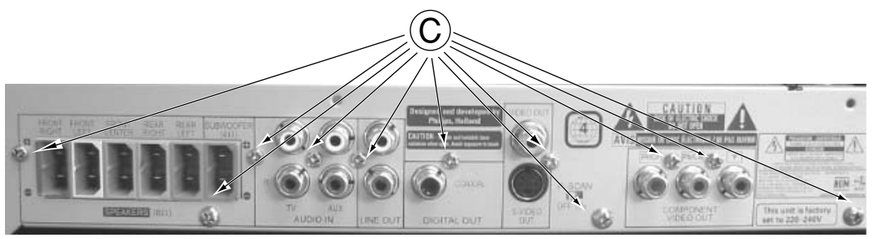



Figure 7

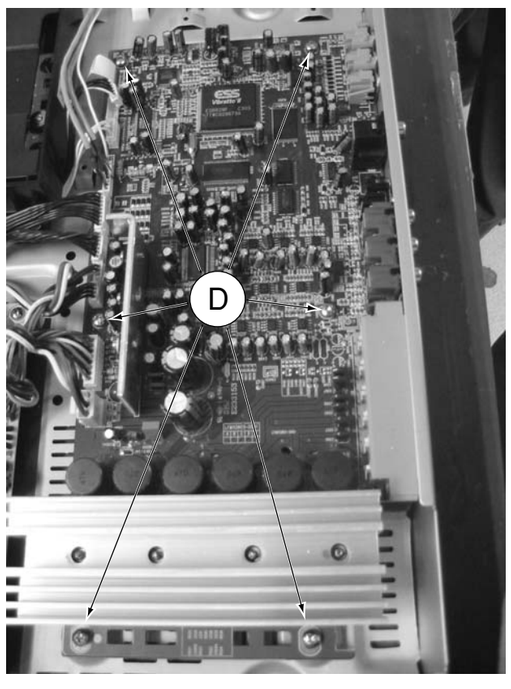



Figure 8



# SERVICE POSITIONS

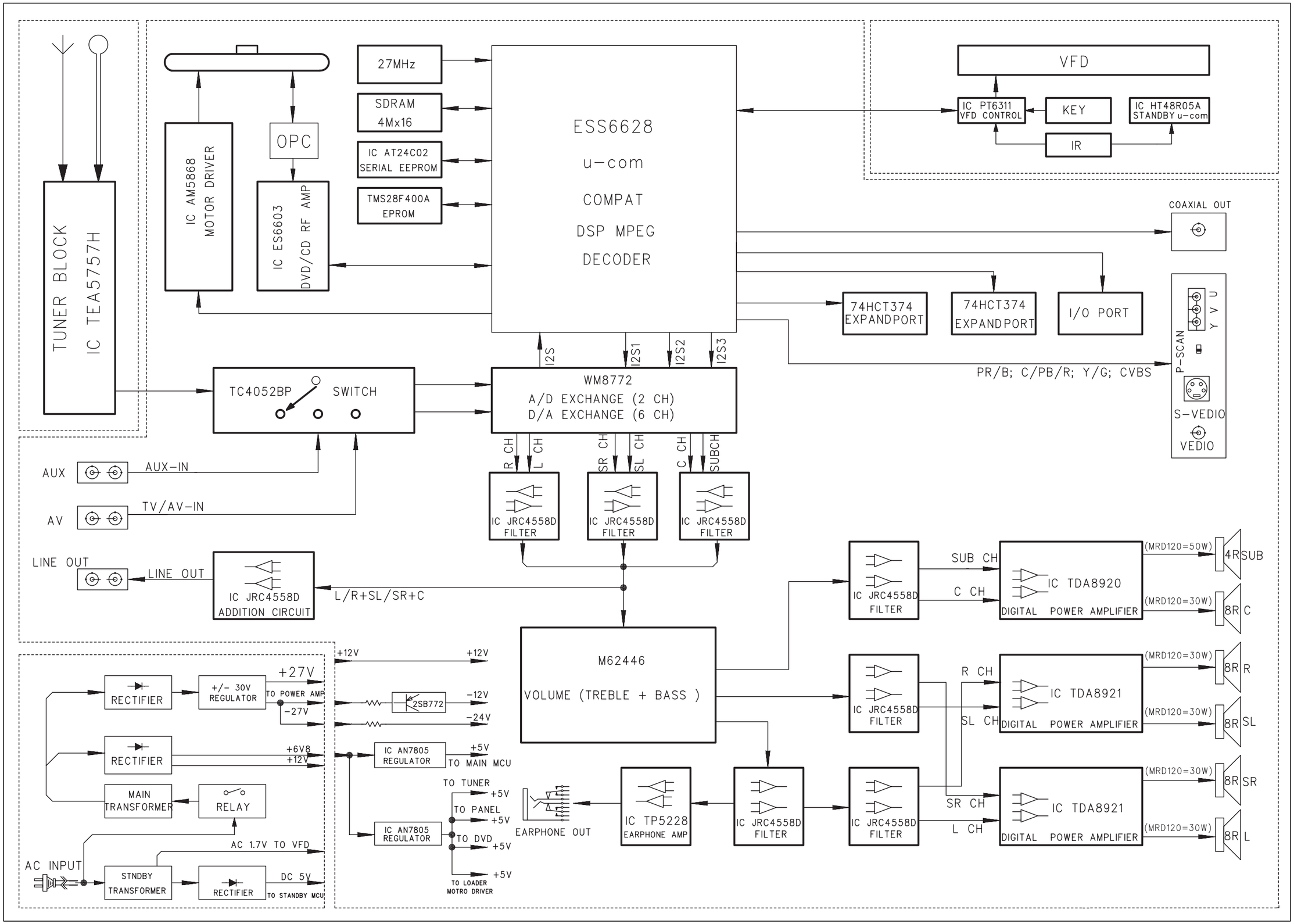
Service position A

Note: In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

Service position B

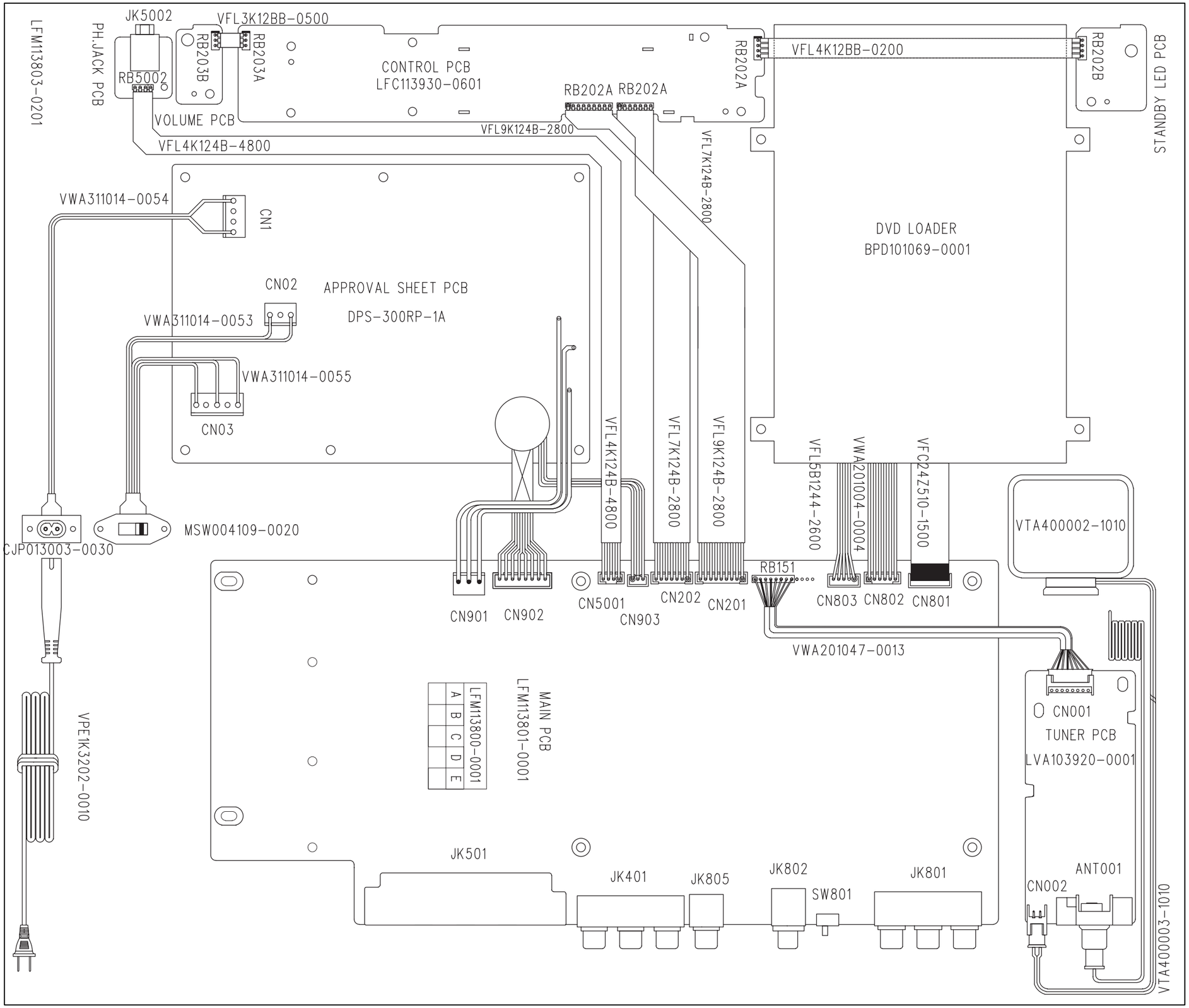
4-1

## BLOCK DIAGRAM



4-2

## WIRING DIAGRAM



# KEY ( CONTROL / STANDBY / VOL) BOARD

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Pin Connection ..... 5-1
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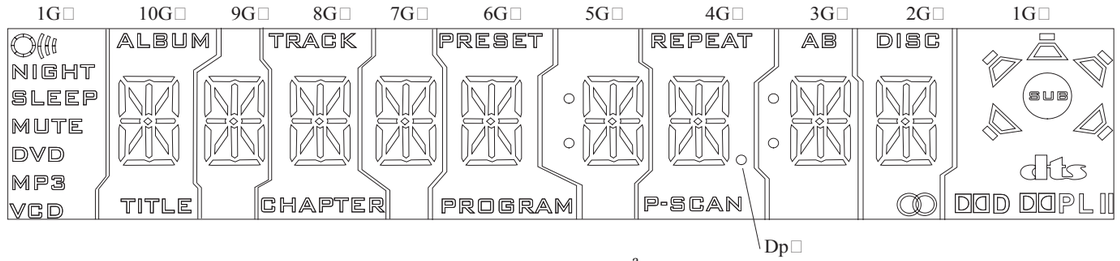
PCB Layout Top & Bottom View ..... 5-3
Electrical Parts List & Voltages ..... 5-4




## FTD DISPLAY PIN ASSIGNMENT




(2G - 10G)

| | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|---|---|---|---|---|---|---|---|---|---|---|
| P1 | a | a | a | a | a | a | a | a | a | |
| P2 | b | b | b | b | b | b | b | b | b | |
| P3 | f | f | f | f | f | f | f | f | f | |
| P4 | h | h | h | h | h | h | h | h | h | |
| P5 | j | j | j | j | j | j | j | j | j | |
| P6 | k | k | k | k | k | k | k | k | k | |
| P7 | m | m | m | m | m | m | m | m | m | |
| P8 | s | s | s | s | s | s | s | s | s | |
| P9 | g | g | g | g | g | g | g | g | g | |
| P10 | c | c | c | c | c | c | c | c | c | |
| P11 | e | e | e | e | e | e | e | e | e | |
| P12 | r | r | r | r | r | r | r | r | r | |
| P13 | p | p | p | p | p | p | p | p | p | |
| P14 | n | n | n | n | n | n | n | n | n | |
| P15 | d | d | d | d | d | d | d | d | d | |
| P16 | | | | | | Col | Dp | Col | | |
| P17 | ALBUM | | TRACK | | PRESET | | REPEAT | A | DISC | |
| P18 | TITLE | | CHAPTER | | PROGRAM | | P-SCAN | B | | |

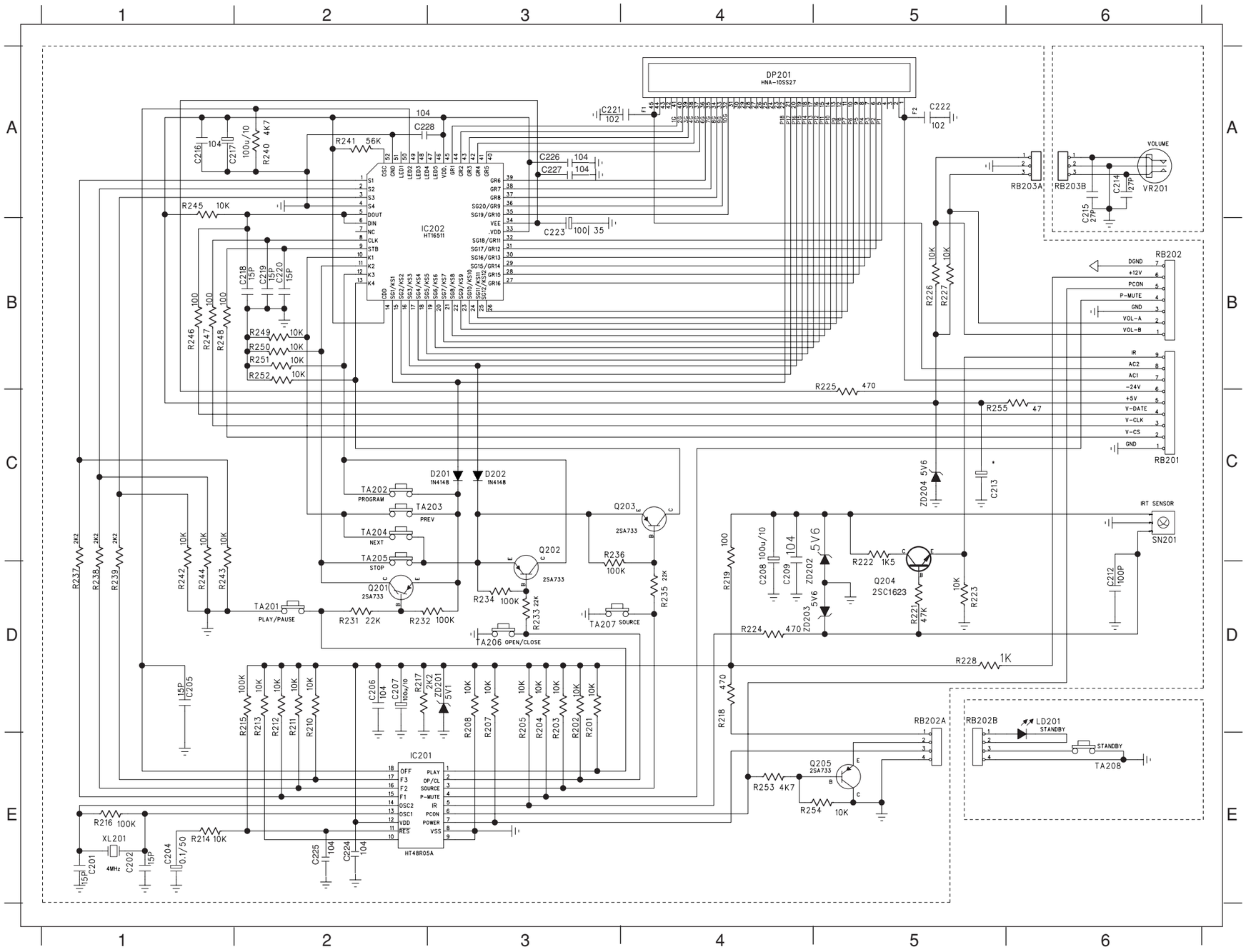
## *PIN CONNECTION*

| PIN NO. | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31~23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONNECTION | F2 | F2 | NP | NP | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G | 10G | NX | P18 | P17 | P16 | P15 | P14 | P13 | P12 | P11 | P10 | P9 | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | NP | NP | F1 | F1 |

## Note ##
1. Fn: Filament pin
2. NP : No Pin
3. NX : No Extended Pin
4. nG : Grid Pin
5. PN : Anode Pin

5-2

# CIRCUIT DIAGRAM - KEY BOARD

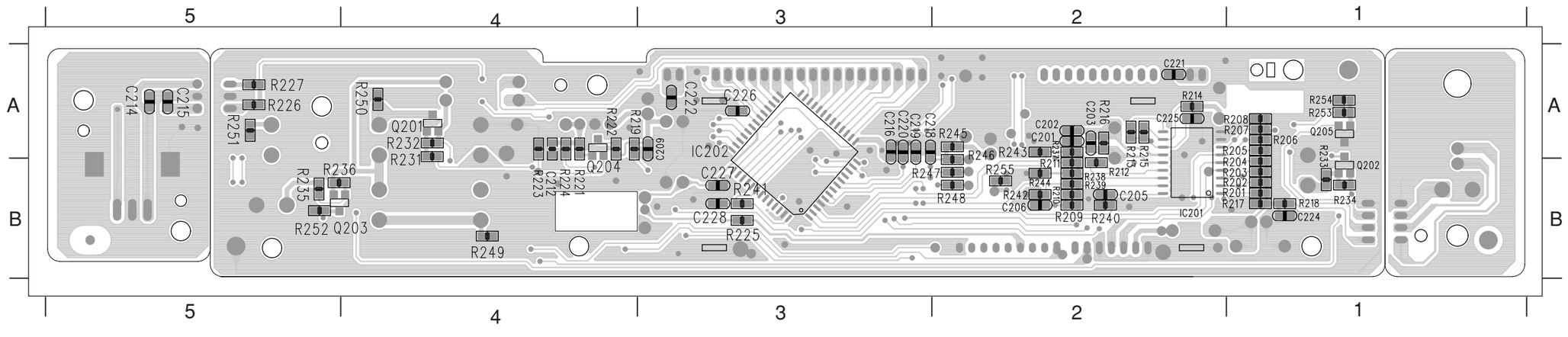



| | | | |
|---|---|---|---|
| C201 | E1 | R232 | D2 |
| C202 | E1 | R233 | D3 |
| C204 | E1 | R234 | D3 |
| C205 | D1 | R235 | D4 |
| C206 | D2 | R236 | D3 |
| C207 | D2 | R237 | D1 |
| C208 | D4 | R238 | D1 |
| C209 | D4 | R239 | D1 |
| C212 | D6 | R240 | A2 |
| C214 | A6 | R241 | A2 |
| C215 | A6 | R242 | D1 |
| C216 | A1 | R243 | D1 |
| C217 | A1 | R244 | D1 |
| C218 | B2 | R245 | A1 |
| C219 | B2 | R246 | B1 |
| C220 | B2 | R247 | B1 |
| C221 | A3 | R248 | B1 |
| C222 | A5 | R249 | B2 |
| C223 | B2 | R250 | B2 |
| C224 | E2 | R251 | B2 |
| C225 | E2 | R252 | B2 |
| C226 | A3 | R253 | E4 |
| C227 | A3 | R254 | E5 |
| C228 | A2 | R255 | C6 |
| D201 | C3 | RB201 | C6 |
| D202 | C3 | RB202 | B6 |
| DP201 | A4 | RB202A | D5 |
| IC201 | E2 | RB202B | D5 |
| IC202 | B3 | RB203A | A6 |
| LD201 | D6 | RB203B | A6 |
| Q201 | D2 | SN201 | C6 |
| Q202 | D3 | TA201 | D2 |
| Q203 | C4 | TA202 | C2 |
| Q204 | D5 | TA203 | C2 |
| Q205 | E5 | TA204 | C2 |
| R201 | D3 | TA205 | C2 |
| R202 | D3 | TA206 | D3 |
| R203 | D3 | TA207 | D3 |
| R204 | D3 | TA208 | E6 |
| R205 | D3 | VR201 | A6 |
| R207 | D3 | XL201 | E1 |
| R208 | D3 | ZD201 | D3 |
| R210 | D2 | ZD202 | D4 |
| R211 | D2 | ZD203 | D4 |
| R212 | D2 | ZD204 | C5 |
| R213 | D2 | | |
| R214 | E1 | | |
| R215 | D2 | | |
| R216 | E1 | | |
| R217 | D2 | | |
| R218 | D4 | | |
| R219 | D4 | | |
| R221 | D5 | | |
| R222 | C5 | | |
| R223 | D5 | | |
| R224 | D4 | | |
| R225 | C5 | | |
| R226 | B5 | | |
| R227 | B5 | | |
| R228 | D5 | | |
| R231 | D2 | | |

5-3

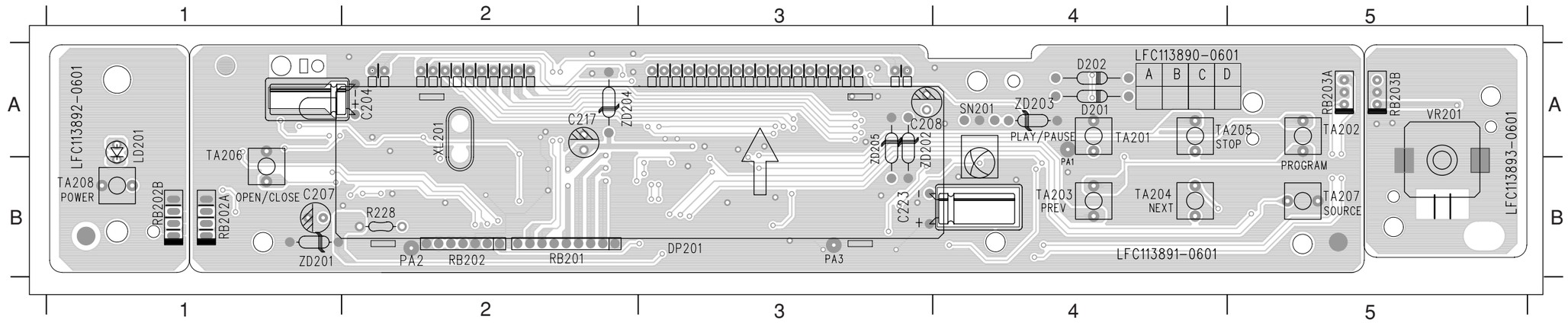
## PCB LAYOUT - KEY BOARD ( TOP)

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C201 | A2 | C214 | A5 | C221 | A2 | C228 | B3 | Q204 | B5 | R205 | A1 | R213 | A2 | R219 | A4 | R226 | A5 | R235 | B5 | R241 | B3 | R247 | B2 | R253 | A1 |
| C202 | A2 | C215 | A5 | C222 | A3 | IC201 | B2 | Q205 | A1 | R207 | A1 | R214 | A2 | R221 | B4 | R227 | A5 | R236 | B5 | R242 | B2 | R248 | B2 | R254 | A1 |
| C205 | B2 | C216 | A3 | C224 | B1 | IC202 | A3 | R201 | B1 | R208 | A1 | R215 | A2 | R222 | A4 | R231 | A4 | R237 | A2 | R243 | A2 | R249 | B4 | R255 | B2 |
| C206 | A2 | C218 | A3 | C225 | A2 | Q201 | A4 | R202 | B1 | R210 | B2 | R216 | A2 | R223 | B4 | R232 | A4 | R238 | B2 | R244 | B2 | R250 | A4 | | |
| C209 | A3 | C219 | A3 | C226 | A3 | Q202 | B1 | R203 | B1 | R211 | B2 | R217 | B1 | R224 | B4 | R233 | B1 | R239 | B2 | R245 | A2 | R251 | A5 | | |
| C212 | B4 | C220 | A3 | C227 | B3 | Q203 | B5 | R204 | A1 | R212 | B2 | R218 | B1 | R225 | B3 | R234 | B1 | R240 | B2 | R246 | A2 | R252 | B5 | | |




## PCB LAYOUT - KEY BOARD ( BOTTOM)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C204 | A2 | D202 | A4 | RB202A | B1 | TA202 | A5 | TA208 | B1 | ZD204 | A2 |
| C207 | B1 | DP201 | B3 | RB202B | B1 | TA203 | B4 | VR201 | A5 | | |
| C208 | A3 | LD201 | A1 | RB203A | A5 | TA204 | B4 | XL201 | A2 | | |
| C217 | A2 | R228 | B2 | RB203B | A5 | TA205 | A4 | ZD201 | B1 | | |
| C223 | B3 | RB201 | B2 | SN201 | A4 | TA206 | B1 | ZD202 | A3 | | |
| D201 | A4 | RB202 | B2 | TA201 | A4 | TA207 | B5 | ZD203 | A4 | | |



***ELECTRICAL PARTS LIST - KEY (CONTROL/STANDBY/VOL) BOARD***

MISCELLANEOUS

| | | |
|---|---|---|
| DP2201 | 9965 000 18031 | VFD 100x25mm |
| LD2201 | 9965 000 17400 | LED 3 DIA RED ROUND |
| SN2201 | 9965 000 23591 | IRT RECEIV IRM-2038F4 |
| TA2201 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2202 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2203 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2204 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2205 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2206 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2207 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| TA2208 | 4822 276 13648 | AI TACT SW SKHVBE3520 ALPS |
| VR2201 | 9965 000 23589 | ENCODER L20 a=12 WITHOUT CC |
| XL2201 | 9965 000 23590 | CRYSTAL 4MHz HC-49US +/-15PPM |

DIODES

| | | |
|---|---|---|
| D2201 | 4822 130 30621 | 1N4148 |
| D2202 | 4822 130 30621 | 1N4148 |
| ZD2201 | 4822 130 34233 | BZX79-B5V1 |
| ZD2202 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD2203 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|---|---|---|
| Q2201 | 9965 000 14175 | 2SA733Q,P |
| Q2202 | 9965 000 14175 | 2SA733Q,P |
| Q2203 | 9965 000 14175 | 2SA733Q,P |
| Q2204 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q2205 | 9965 000 14175 | 2SA733Q,P |
| IC2201 | 9965 000 23592 | IC 18 PIN HT48R05A-1 SOP HOLTEK |
| IC2202 | 9965 000 20647 | IC 52 PIN TP6311QH QFP TOPRO |

Note : Only the parts mentioned in this list are normal service spare parts.

5-4

## VOLTAGES

IC2201 (HT480051)

| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOLTAGE | 5.1 | 5.1 | 5.1 | 0 | 5.1 | 0 | 5.1 | 0 | 0 | 4.9 | 4.9 | 5.2 | 0 | 0 | 0 | 0 | 0 | 0 | | |

IC2202 (PT6311)

| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOLTAGE | 0 | 4.8 | 0 | 4.8 | 3.9 | 3.9 | 0 | 5 | 4.6 | 0 | 0 | 0 | 0 | -27.8 | -23.4 | -18.5 | -30.5 | -30.5 | -30.5 | -13.5 |
| PIN | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| VOLTAGE | -28.8 | -23.3 | -28.2 | -30.5 | -28.2 | -23.3 | -22 | -16.1 | -17 | -25.8 | -29.3 | -29 | -29 | -29 | -29 | -29 | -29 | -28.9 | -29 | -28.9 |
| PIN | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | | | | | | | | |
| VOLTAGE | -29 | -28.9 | -29.3 | 29.6 | 4.8 | 0 | 4.8 | 0 | 4.8 | 0 | 0 | 2.6 | | | | | | | | |

Q2201 (2SA733)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE | 5 | 0 | 5 |

Q2202 (2SA733)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE | 5 | 0 | 5 |

Q2203 (2SA733)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE | 5 | 0 | 5 |

Q2204 (2SC1623)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE | 4.6 | 4.2 | 4.2 |

Q2205 (2SA733)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE | 5 | 0 | 5 |

# TUNER BOARD

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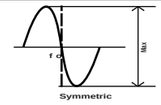
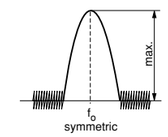
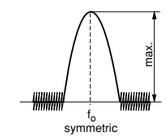
Circuit Diagram ..... 6-3
PCB Layout View ..... 6-4
Electrical Parts List & Voltage List ..... 6-5




## TUNER ADJUSTMENT TABLE

| Waverange | Input frequency | Input | Tuned to | Adjust | Output | Scope/Voltmeter |
|---|---|---|---|---|---|---|
| *VARICAP ALIGNMENT* | | | | | | |
| **FM** 87.5 - 108MHz (50kHz grid) | | | 108MHz | check | | 6.5V ±0.2V |
| | | | 87.5MHz | check | | 1.0V ±0.5V |
| **AM** 530-1710kHz (10kHz grid) ( 21L / 21L / 37S ) | | | 1602KHz | check | | 7.8V ±0.2V |
| | | | 531KHz | T005 | | 1.1V ±0.5V |
| | | | 1700KHz | check | | 8.0V ±0.5V |
| | | | 530KHz | T005 | | 1.1V ±0.2V |
| *FM - IF* | | | | | | |
| **FM** | 10.7MHz, 50mV continuous wave | | IC001 pin 23 — short circuit to block AFC — 200P | No need to adjust | |   |
| *FM - RF* | | | | | | |
| **FM** | 108MHz | mod=1kHz Δf=±22.5kHz | 106MHz | VC001 | MAX | MAX |
| | 87.5MHz | | 90.1MHz | L001 | | |
| *AM IF* | | | | | | |
| **AM** | 450kHz Connect pin 29 of IC001 (AM Osc.) with short wire to ground (pin 6) | Δf = ±5kHz $V_{RF}$ = 3mV | IC001 pin 24 — R220 — 100nF | T001 T002 | MAX |   |
| *AM AFC* **MW** | | ΔV=mV | | T003 | | |
| *AM RF* 3) | | | | | | |
| **MW** | 1404kHz | Δf = ±30kHz $V_{RF}$ as low as possible | 1404kHz | VC001 | MAX |   |
| | 576kHz | | 612kHz | T006 | | |
| | 1400kHz | | 1400kHz | VC002 | | |
| | 610kHz | | 610kHz | T006 | | |

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

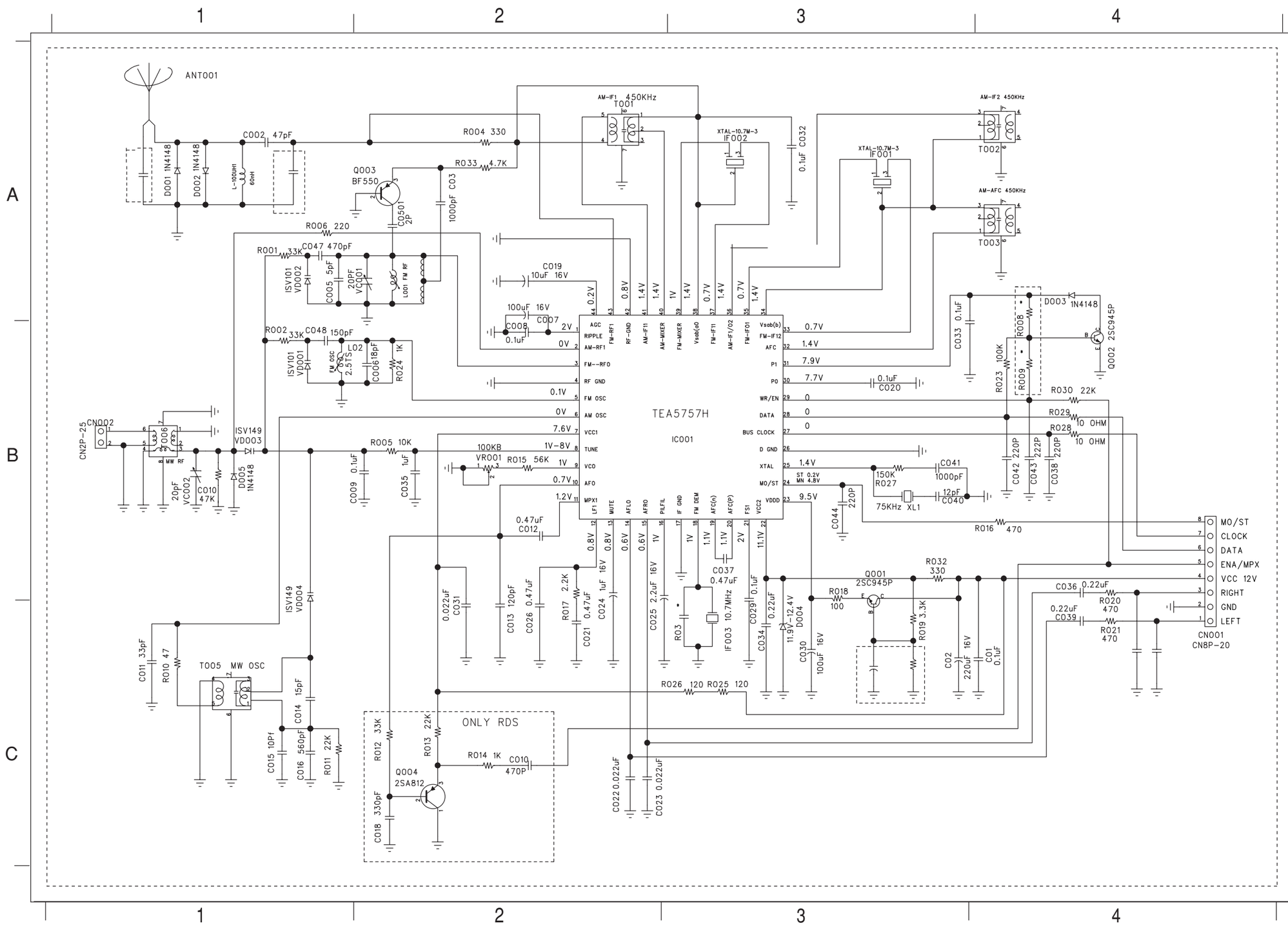
1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!

6-2

# CIRCUIT DIAGRAM - TUNER BOARD

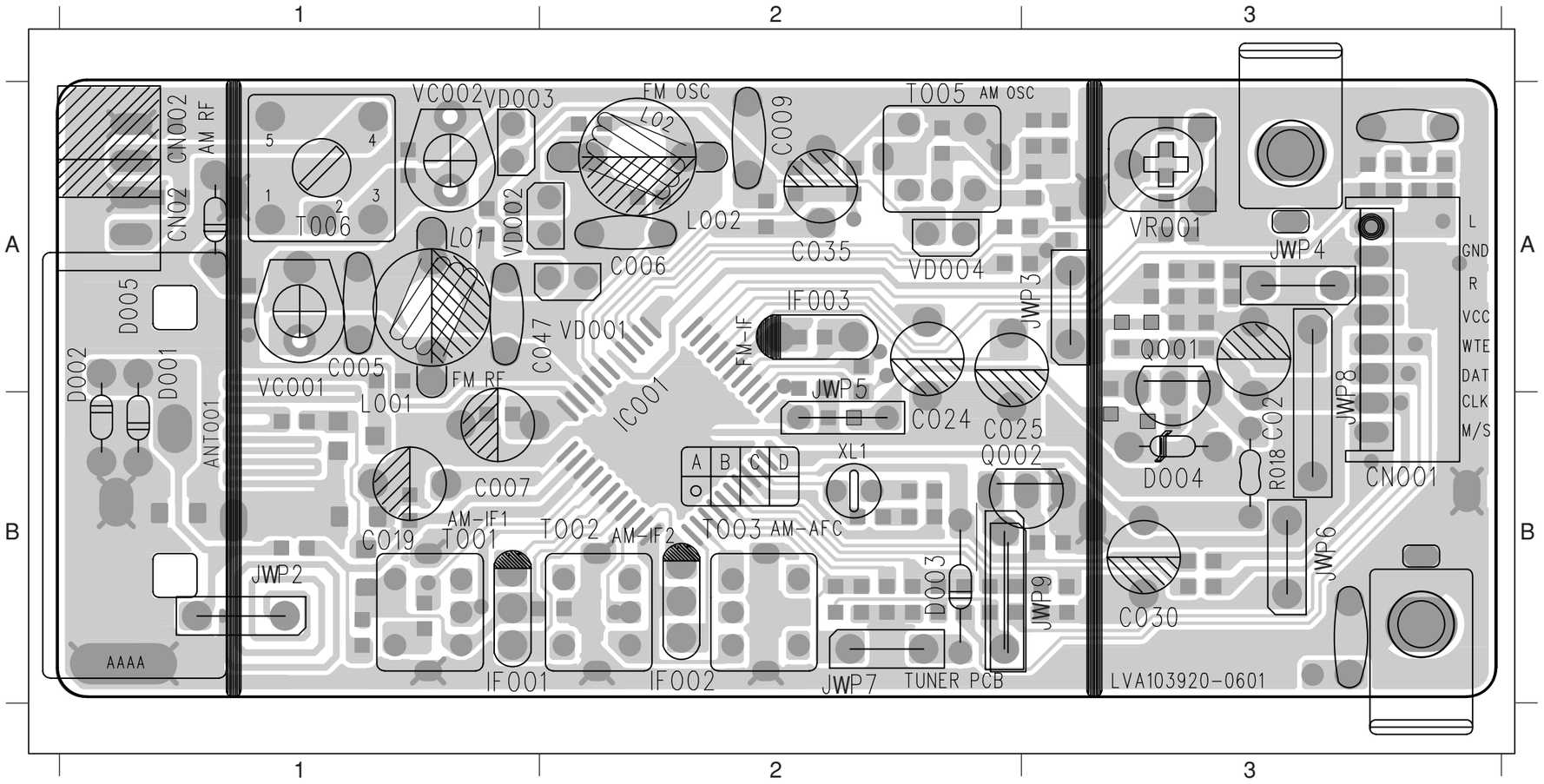



| | | | |
|---|---|---|---|
| ANT001 | A1 | R004 | A2 |
| C002 | A1 | R005 | B2 |
| C005 | A1 | R006 | A1 |
| C007 | A2 | R010 | C1 |
| C006 | B2 | R011 | C1 |
| C008 | B2 | R015 | B2 |
| C009 | B2 | R016 | B4 |
| C01 | C4 | R017 | C2 |
| C02 | C3 | R018 | B3 |
| C03 | A2 | R019 | C3 |
| C010 | B1 | R020 | B4 |
| C011 | C1 | R021 | C4 |
| C012 | B2 | R023 | B4 |
| C013 | C2 | R024 | B2 |
| C014 | C1 | R025 | C3 |
| C015 | C1 | R026 | C3 |
| C016 | C1 | R027 | B3 |
| C019 | A2 | R028 | B4 |
| C020 | B3 | R029 | B4 |
| C021 | C2 | R030 | B4 |
| C022 | C2 | R032 | B3 |
| C023 | C2 | R033 | A2 |
| C024 | C2 | T001 | A2 |
| C025 | C2 | T002 | A4 |
| C026 | C2 | T003 | A4 |
| C029 | C3 | T005 | C1 |
| C030 | C3 | T006 | B1 |
| C031 | C2 | VC001 | A2 |
| C032 | A3 | VC002 | B1 |
| C033 | B3 | VD001 | B1 |
| C034 | C3 | VD002 | A1 |
| C035 | B2 | VD003 | B1 |
| C036 | B4 | VD004 | C1 |
| C037 | B3 | VR001 | B2 |
| C038 | B4 | XL1 | B3 |
| C039 | C4 | | |
| C040 | B3 | | |
| C041 | B3 | | |
| C042 | B4 | | |
| C043 | B4 | | |
| C044 | B3 | | |
| C047 | A1 | | |
| C048 | B1 | | |
| C0501 | A2 | | |
| CN001 | C4 | | |
| CN002 | B1 | | |
| D001 | A1 | | |
| D002 | A1 | | |
| D003 | A4 | | |
| D004 | C3 | | |
| D005 | B1 | | |
| IC001 | B3 | | |
| IF001 | A3 | | |
| IF002 | A3 | | |
| IF003 | C3 | | |
| L02 | B1 | | |
| L001 | A2 | | |
| Q001 | B3 | | |
| Q002 | B4 | | |
| Q003 | A2 | | |
| R001 | A1 | | |
| R002 | B1 | | |

6-3

## PCB LAYOUT - TUNER BOARD ( TOP)

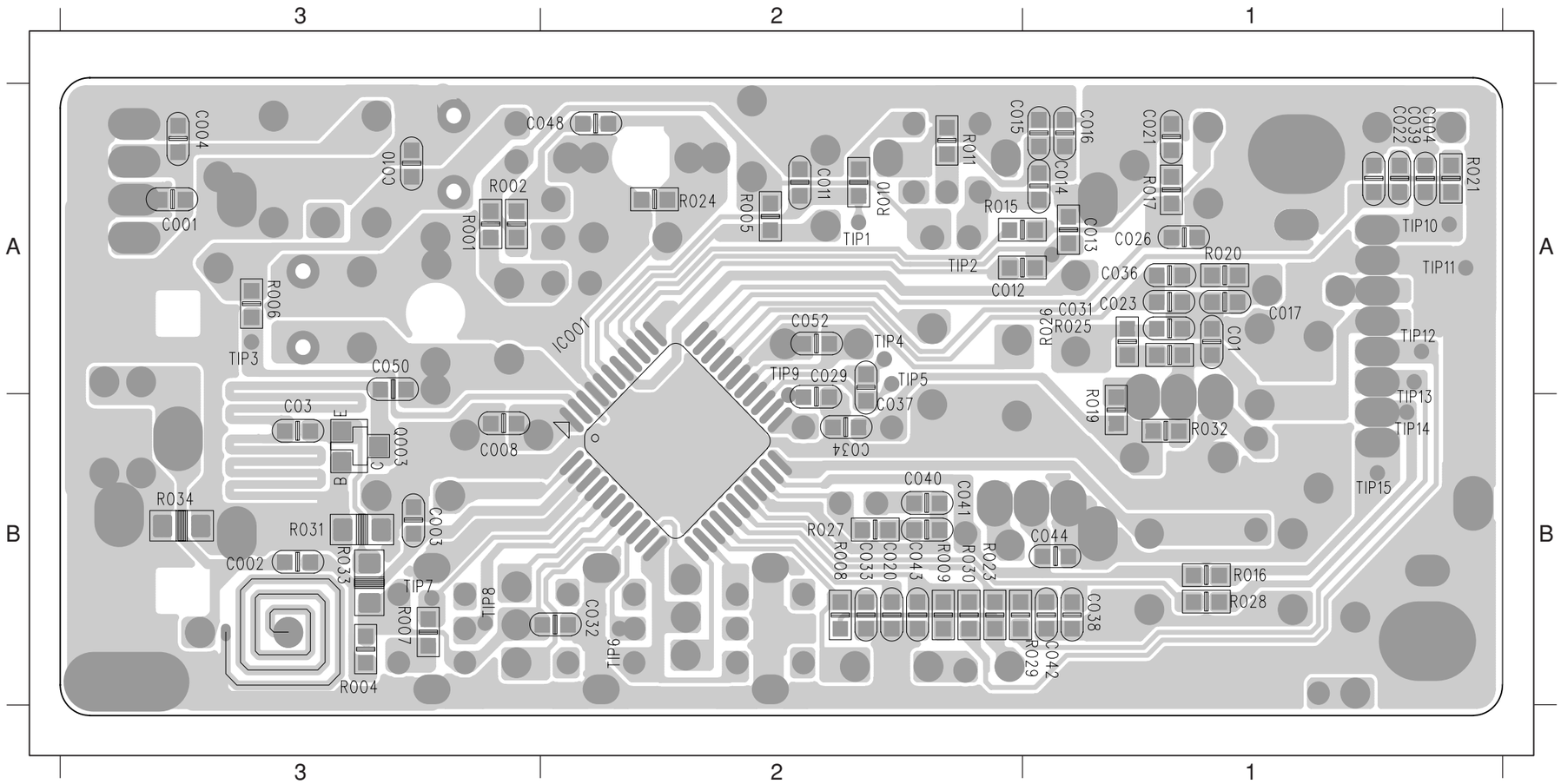
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ANT001 | B1 | C025 | B2 | D002 | A1 | IF003 | A2 | J WP8 | A3 | T001 | B1 | VD001 | A2 |
| C005 | A1 | C030 | B3 | D003 | B2 | J WP2 | B1 | J WP9 | B3 | T002 | B2 | VD002 | A1 |
| C006 | A2 | C035 | A2 | D004 | B3 | J WP3 | A3 | L02 | A2 | T003 | B2 | VD003 | A1 |
| C007 | B1 | C047 | A1 | D005 | A1 | J WP4 | A3 | L001 | B1 | T005 | A2 | VD004 | A2 |
| C009 | A2 | CN001 | B3 | IC001 | B2 | J WP5 | B2 | Q001 | A3 | T006 | A1 | VR001 | A3 |
| C019 | B1 | CN002 | A1 | IF001 | B1 | J WP6 | B3 | Q002 | B2 | VC001 | A1 | XL1 | B2 |
| C024 | B2 | D001 | A1 | IF002 | B2 | J WP7 | B2 | R018 | B3 | VC002 | A1 | | |



6-4

## PCB LAYOUT - TUNER BOARD ( BOTTOM)

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C01 | A3 | C013 | A3 | C023 | A3 | C037 | A2 | C048 | A2 | R005 | A2 | R019 | B3 | R028 | B3 |
| C03 | B3 | C014 | A3 | C026 | A3 | C038 | B3 | C050 | A3 | R006 | A3 | R020 | A3 | R029 | B3 |
| C001 | A3 | C015 | A2 | C029 | A2 | C039 | A3 | C052 | A2 | R007 | B3 | R021 | A3 | R030 | B2 |
| C002 | B3 | C016 | A3 | C031 | A3 | C040 | B2 | IC001 | A2 | R010 | A2 | R023 | B2 | R031 | B3 |
| C008 | B3 | C020 | B2 | C032 | A2 | C041 | B2 | Q003 | B3 | R011 | A2 | R024 | A2 | R032 | B3 |
| C010 | A3 | C021 | A3 | C033 | B2 | C042 | B3 | R001 | A3 | R015 | A2 | R025 | A3 | R033 | B3 |
| C011 | A2 | C022 | A3 | C034 | B2 | C043 | B2 | R002 | A3 | R016 | B3 | R026 | A3 | R034 | B3 |
| C012 | A2 | C023 | A3 | C036 | A3 | C044 | B3 | R004 | B3 | R017 | A3 | R027 | B2 | | |



***ELECTRICAL PARTS LIST - TUNER BOARD***

MISCELLANEOUS

| | | |
|---|---|---|
| ANT001 | 9965 000 24668 | RF JACK MALE TYPE 75 OHM |
| CN002 | 9965 000 25150 | CONNECTOR S2B-XH-A 2P |
| IF001 | 9965 000 24669 | CER FILTER 10.7MHz |
| IF002 | 9965 000 24670 | CER FILTER 10.7MHz |
| IF003 | 9965 000 24671 | CER FILTER CDA10.7MG-18A |
| L001 | 9965 000 23587 | MOULDED COIL 2.5T 57-89nH |
| L02 | 9965 000 23586 | SPRING COIL 0.8X4.5DX(1~2)2.5T |
| T001 | 9965 000 24672 | AM IFT 450kHz 180pF Q=80MIN |
| T002 | 9965 000 24673 | AM IFT 450kHz 180pF Q=80MIN |
| T003 | 9965 000 24673 | AM IFT 450kHz 180pF Q=80MIN |
| T005 | 9965 000 24674 | OSC COIL AM 120uH (796kHz) |
| T006 | 9965 000 24675 | ANT OSC AM 4-6:10T 1-3:86T |
| VC001 | 9965 000 24676 | CONDTRIM 3-10pF NP0 PB<1000PPM |
| VC002 | 9965 000 24676 | CONDTRIM 3-10pF NP0 PB<1000PPM |
| VR001 | 9965 000 24677 | CNTL TRIMR 50KB 30% P=5x5mm |
| XL1 | 9965 000 23588 | CRYSTAL 75kHz +/-15 PPMCOLUMN |

DIODES

| | | |
|---|---|---|
| D001 | 4822 130 30621 | 1N4148 |
| D002 | 4822 130 30621 | 1N4148 |
| D003 | 4822 130 30621 | 1N4148 |
| D004 | 9965 000 17375 | 11.9-12.4V 0.5W |
| D005 | 4822 130 30621 | 1N4148 |
| VD001 | 4822 130 30621 | 1N4148 |
| VD002 | 4822 130 30621 | 1N4148 |
| VD003 | 4822 130 81673 | 1SV149 |
| VD004 | 4822 130 81673 | 1SV149 |

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|---|---|---|
| Q001 | 4822 130 41198 | 2SC945P |
| Q002 | 4822 130 41198 | 2SC945P |
| Q003 | 9965 000 22272 | XISTR PNP BF550 SOT23 |
| IC001 | 9965 000 22265 | IC 44 PIN TEA5757H QFP44 |

Note : Only the parts mentioned in this list are normal service spare parts.

6-5

## VOLTAGES

IC001 (TEA5757H)

| PIN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOLTAGE(FM) | 2.1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 7.21 | 4.49 | 1 | 0.7 | 1.24 | 0.83 | 0.77 | 0.63 | 0.64 | 1.01 | 0.01 | 0 | 1.15 | 1.15 |
| VOLTAGE(AM) | 2.1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 7.45 | 1.12 | 1.36 | 0.58 | 1.24 | 0.18 | 0.77 | 0.63 | 0.64 | 1.01 | 0.01 | 0 | 1.15 | 1.15 |
| PIN | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| VOLTAGE(FM) | 1.94 | 10.9 | 9.13 | 1.26 | 1.92 | 0.01 | 0.19 | 0.52 | 0.2 | 0.01 | 0.01 | 1.43 | 0.75 | 1.43 | 0.7 | 1.43 | 0.62 | 1.35 | 1.02 | 1.34 |
| VOLTAGE(AM) | 1.94 | 10.9 | 9.13 | 1.2 | 1.88 | 0.01 | 0.19 | 0.52 | 0.2 | 0.01 | 0.01 | 1.43 | 1.44 | 1.47 | 1.42 | 1.47 | 1.32 | 1.35 | 1.41 | 1.37 |
| PIN | 41 | 42 | 43 | 44 | | | | | | | | | | | | | | | | |
| VOLTAGE(FM) | 1.35 | 0.01 | 0.75 | 0.15 | | | | | | | | | | | | | | | | |
| VOLTAGE(AM) | 1.35 | 0.01 | 0.75 | 0.43 | | | | | | | | | | | | | | | | |

Q003 (BF550)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE(FM) | 0.01 | 0.66 | 0.01 |
| VOLTAGE(AM) | 0.01 | 0.66 | 0.01 |

Q001 (2SC945)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE(FM) | 0.07 | -0.03 | 1.3 |
| VOLTAGE(AM) | 0.08 | 0.01 | 1.24 |

Q002 (2SC945)

| PIN | 1 | 2 | 3 |
|---|---|---|---|
| VOLTAGE(FM) | 10.12 | 11.8 | 10.77 |
| VOLTAGE(AM) | 10.17 | 11.81 | 10.82 |

# DVD LOADER

## *(For Information only)*

It is not recommended for component repair on this module but to replace the module when it becomes defective.
Therefore no service parts list is published in this chapter.

The only service part available for replacement is:
DVD MECH. LOADER ASSY ..... 9965 000 23573

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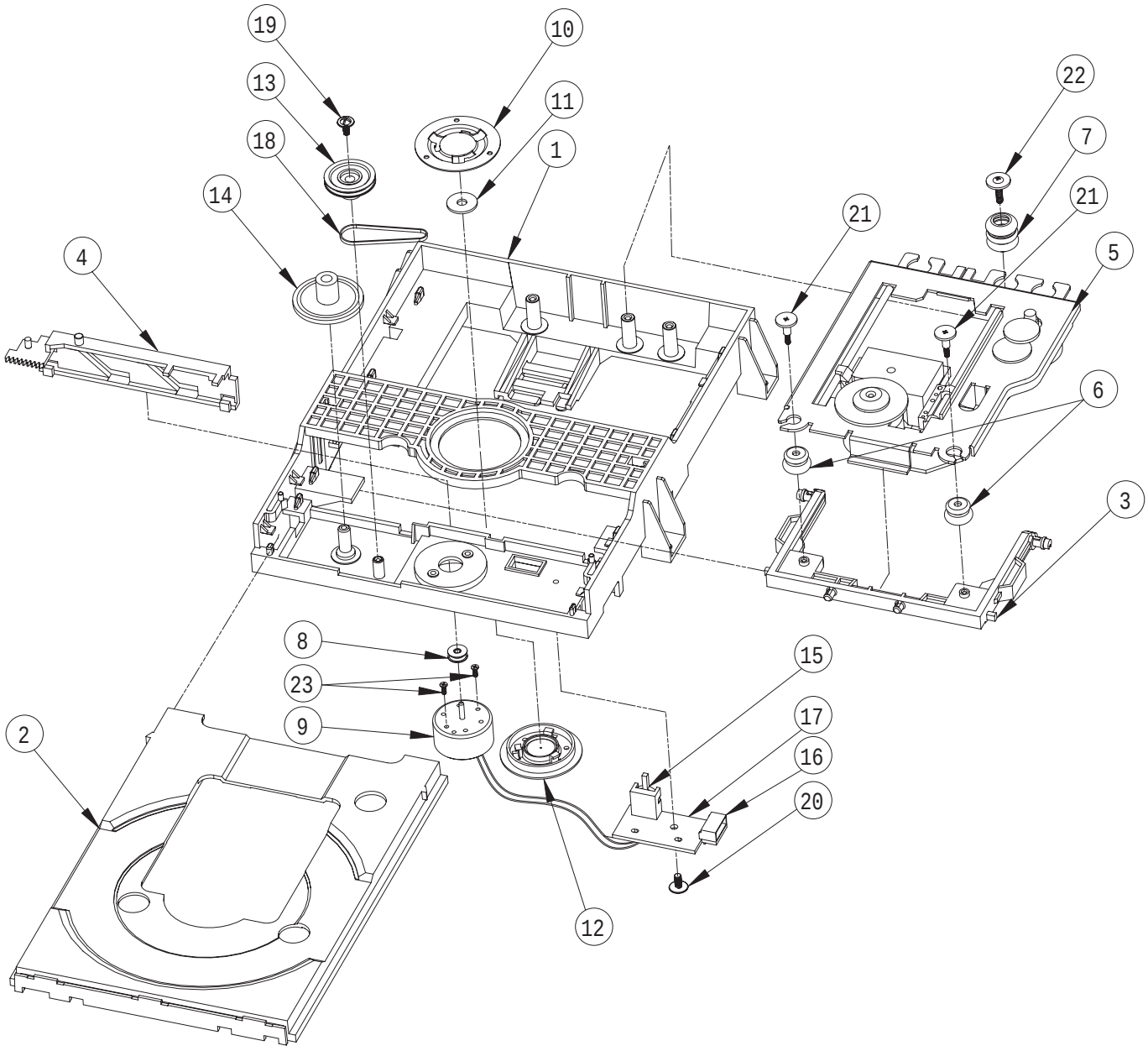
## Exploded View



# MAIN BOARD

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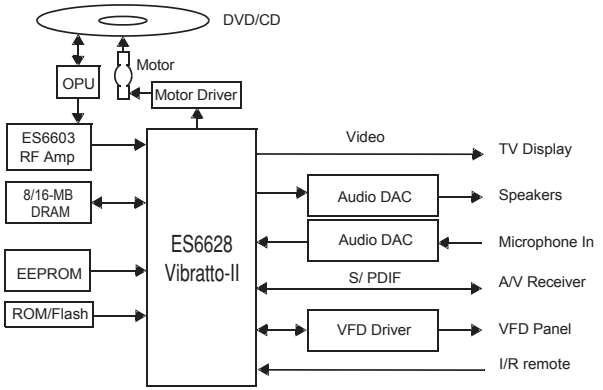
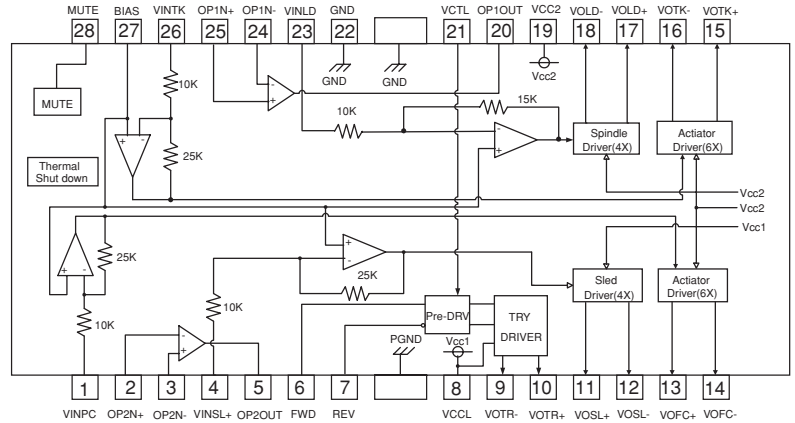
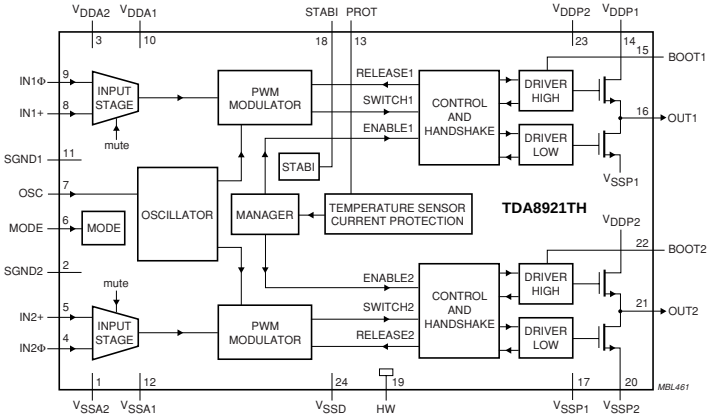
## ES6628F INTERNAL IC DIAGRAM




## AM5868S INTERNAL IC DIAGRAM




## TDA8921TH INTERNAL IC DIAGRAM



# VOLTAGES

IC201 (ES6628)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 3.3 | 1.77 | 1.77 | 1.77 | 3.3 | 3.3 | 3.3 | 1.5 | 0 | 3.3 | 1.4 | 1.5 | 1.5 | 1.5 | 1 | 0 | 0 | 0 | 3.3 | 0.1 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Voltage | 3.3 | 2.8 | 3.1 | 3 | 0.2 | 0 | 2 | 0.2 | 3.3 | 3 | 1.3 | 1.3 | 1.4 | 0 | 3.3 | 1.4 | 1.3 | 1.3 | 1.2 | 1.3 |
| PIN NO | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Voltage | 1.4 | 1.4 | 0 | 3.3 | 1.5 | 1.1 | 1.2 | 1.2 | 1.2 | 1.3 | 1.6 | 0 | 3.3 | 0.1 | 3.3 | 0 | 0 | 0 | 0 | 0 |
| PIN NO | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| Voltage | 0 | 3.3 | 1.3 | 1.6 | 2.6 | 1.8 | 1.2 | 2.5 | 0.7 | 0 | 2 | 2 | 1.1 | 1.7 | 2 | 2.6 | 2 | 0 | 3.3 | 2 |
| PIN NO | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| Voltage | 2 | 2 | 3.3 | 3.3 | 3.3 | 0 | 2 | 0 | 3.3 | 0 | 0.7 | 0.9 | 1.7 | 1.4 | 0 | 3.3 | 1.7 | 1.8 | 1.6 | 1 |
| PIN NO | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| Voltage | 1.2 | 1.6 | 1.6 | 3.3 | 0 | 1.3 | 2.1 | 1.3 | 3.3 | 0.6 | 3.3 | 0 | 1 | 0.8 | 0.7 | 1.6 | 1 | 0 | 0 | 0 |
| PIN NO | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
| Voltage | 0 | 1.5 | 1.6 | 1.6 | 1.2 | 3.3 | 0 | 3.3 | 3 | 3.6 | 3.6 | 3.6 | 0.2 | 3.3 | 3.3 | 3.3 | 0 | 2 | 1.3 | 0 |
| PIN NO | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 |
| Voltage | 2 | 1.6 | 0 | 1.6 | 1.5 | 0 | 3.3 | 2.1 | 0.9 | 1.5 | 1.3 | 3.3 | 1.5 | 1.5 | 1.5 | 1.5 | 0 | 0 | 1.5 | 1.5 |
| PIN NO | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| Voltage | 1.5 | 3.3 | 0.6 | 2.19 | 1.5 | 1.5 | 0 | 1.5 | 3 | 3.3 | 2.1 | 1.5 | 1.7 | 1.5 | 1.6 | 1.7 | 2.5 | 2.5 | 0 | 2.4 |
| PIN NO | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 |
| Voltage | 3.3 | 0 | 3.3 | 3.3 | 3.3 | 0 | 0 | 2.4 | 0 | 2.4 | 0 | 0.7 | 3.3 | 3.3 | 3.3 | 0 | 0 | 2.1 | 5 | 5 |
| PIN NO | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | | | | | | | | | | | | |
| Voltage | -0.4 | -0.4 | -0.4 | 4 | 4 | 3.3 | 3.1 | 0 | | | | | | | | | | | | |

IC202 (MBM29LV160)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 1.2 | 1.7 | 2.6 | 2 | 1.2 | 2.5 | 0.7 | 0 | 0 | 0 | 3.2 | 0 | 0 | 1.3 | 0 | 0 | 2.1 | 2.5 | 1.7 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Voltage | 2 | 1.9 | 2.1 | 2.1 | 2.1 | 0 | 0 | 0 | 1.8 | 1.2 | 1.9 | 1.7 | 1.2 | 1.3 | 1.2 | 3.3 | 1.5 | 1.2 | 2 | 1.2 |
| PIN NO | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | | | | | | | | | | | | |
| Voltage | 1.7 | 1.2 | 1.5 | 2 | 0 | 0 | 0 | 0 | | | | | | | | | | | | |

IC203 (SD41620HGT)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 3.3 | 1.3 | 3.3 | 1.2 | 1.4 | 0 | 1.4 | 1.3 | 3.3 | 1.1 | 1.1 | 0 | 1.4 | 3.3 | 0.1 | 3 | 3.1 | 3 | 2.8 | 0.2 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Voltage | 0.2 | 0.1 | 0 | 0 | 0.5 | 1.5 | 3.3 | 0 | 1.4 | 1.5 | 1.5 | 1.5 | 1 | 0 | 0.1 | 1.6 | 3.3 | 1.6 | 0.1 | 0 |
| PIN NO | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | | | | | | |
| Voltage | 0 | 1.2 | 3.3 | 1.2 | 1.2 | 0 | 1.1 | 1.1 | 3.3 | 1.4 | 1.5 | 0 | 1.4 | 0 | | | | | | |

IC206 (74F374D)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 3.8 | 1.2 | 1.7 | 3.8 | 4.3 | 1.4 | 0.8 | 0.1 | 0 | 5 | 4 | 0.1 | 1.5 | 4 | 0 | 1.9 | 1.2 | 3.5 | 3.3 |
| PIN NO | 21 | 22 | | | | | | | | | | | | | | | | | | |
| Voltage | 4.5 | 0 | | | | | | | | | | | | | | | | | | |

IC207 (74F374D)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 3.8 | 1.2 | 1.7 | 3.8 | 4.3 | 1.4 | 0.8 | 0.1 | 0 | 5 | 4 | 0.1 | 1.5 | 4 | 0 | 1.9 | 1.2 | 3.5 | 3.3 |
| PIN NO | 21 | 22 | | | | | | | | | | | | | | | | | | |
| Voltage | 4.5 | 0 | | | | | | | | | | | | | | | | | | |

IC209 (B1117N)

| PIN NO | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 3.3 | 2.2 | 1.0 |

IC210 (B1117N)

| PIN NO | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 5 | 3.3 | 0 |

IC301 (CD4052BM)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | 0 | 0 | 0 | 5.6 | 0 | 3.8 | 3.8 | 0 | 0.1 | 0 | 0 | 0 | 5.8 |

IC351 (WM8772)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 1.7 | 1.7 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 0 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | | | | | | | | | | | |
| Voltage | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | | | | | | | | | | | | |

IC401 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC402 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC403 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC404 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

8-2

IC405 (M62446FP)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | 0 | 5.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Voltage | 4.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 |
| PIN NO | 41 | 42 | | | | | | | | | | | | | | | | | | |
| Voltage | 4.6 | 4.9 | | | | | | | | | | | | | | | | | | |

IC406 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC407 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC408 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC409 (RC4558)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 0 | 0 | 0 | -12 | 0 | 0 | 0 | 12 |

IC501 (TDA8921TH)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 1.5 | 0.7 | 2 | 1.5 | 4.6 | 0 | 0 | 4.5 | 0 | 0 | 2.1 | 2.2 | 2.2 | 1.8 | 2.1 | 2.1 | 1.1 | 3.1 | 4.5 | 0.1 |
| PIN NO | 21 | 22 | | | | | | | | | | | | | | | | | | |
| Voltage | 1.2 | 1.1 | | | | | | | | | | | | | | | | | | |

IC5001 (APA3541)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Voltage | 2.7 | 0 | 2.7 | 0 | 2.7 | 2.7 | 2.7 | 5.7 |

IC502 (TDA8921TH)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 1.5 | 0.7 | 2 | 1.5 | 4.6 | 0 | 0 | 4.5 | 0 | 0 | 2.1 | 2.2 | 2.2 | 1.8 | 2.1 | 2.1 | 1.1 | 3.1 | 4.5 | 0.1 |
| PIN NO | 21 | 22 | | | | | | | | | | | | | | | | | | |
| Voltage | 1.2 | 1.1 | | | | | | | | | | | | | | | | | | |

IC503 (TDA8921TH)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 1.5 | 0.7 | 2 | 1.5 | 4.6 | 0 | 0 | 4.5 | 0 | 0 | 2.1 | 2.2 | 2.2 | 1.8 | 2.1 | 2.1 | 1.1 | 3.1 | 4.5 | 0.1 |
| PIN NO | 21 | 22 | | | | | | | | | | | | | | | | | | |
| Voltage | 1.2 | 1.1 | | | | | | | | | | | | | | | | | | |

IC504 (74LVC04AD)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 4.1 | 0 | 2.6 | 3 | 2.5 | 2.6 | 0 | 0 | 5.7 | 2.6 | 3 | 5.7 | 0 | 5.7 | | | | | | |

IC801 (ES6603)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 3.5 | 3.5 | 2.6 | 2.6 | 2.6 | 2.6 | 3.8 | 3.8 | 2.7 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 2.7 | 2.7 | 2.6 | 2.6 | 5.1 | 2.6 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Voltage | 3.9 | 5.1 | 0.2 | 0.2 | 0 | 3.3 | 0 | 2.6 | 0 | 0 | 0 | 1.5 | 2.4 | 0 | 3.9 | 1.6 | 3.3 | 2 | 1.5 | 1.6 |
| PIN NO | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Voltage | 1.6 | 2 | 4.2 | 4.2 | 3.3 | 3.3 | 2.7 | 0 | 1.5 | 0 | 0 | 2.5 | 2.5 | 3.5 | 3.5 | 2.5 | 2.4 | 5.1 | 4.3 | 4.3 |
| PIN NO | 61 | 62 | 63 | 64 | | | | | | | | | | | | | | | | |
| Voltage | 3.2 | 3.1 | 0.8 | 3 | | | | | | | | | | | | | | | | |

IC802 (AM5868)

| PIN NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 1.5 | 0.7 | 2 | 1.5 | 4.6 | 0 | 0 | 4.5 | 0 | 0 | 2.1 | 2.2 | 2.2 | 1.8 | 2.1 | 2.1 | 1.1 | 3.1 | 4.5 | 0.1 |
| PIN NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | | | | | |
| Voltage | 0 | 0 | 1.2 | 1.1 | 1.2 | 1.5 | 1.5 | 2 | 0 | 0 | | | | | | | | | | |

IC953 (BA05T)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 6.8 | 0 | 5 |

IC953 (BA05T)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 6.8 | 0 | 5 |

Q301 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q401 (CM5783GR)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q402 (CM5783GR)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q403 (2SA812)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.1 | 0.7 | 0.7 |

Q5001 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q5002 (2SL2001)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 5.6 | 14.4 | 6.2 |

Q5003 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0 | 1.9 | 0 |

Q5041 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q5042 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q501 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q801 (2SK3018)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0 | 0 | 0 |

Q802 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 2.3 | 0 | 0 |

Q803 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0 | 2.3 | 0 |

Q804 (2SC1623)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q805 (2SB1132Q)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 4.8 | 0 | 4.8 |

Q806 (2SB1132Q)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 3.8 | 2.0 | 0 |

Q811 (2SA812)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.1 | 0 | 0.8 |

Q951 (2SA952)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 14 | 14 | |

Q952 (2SC1623)

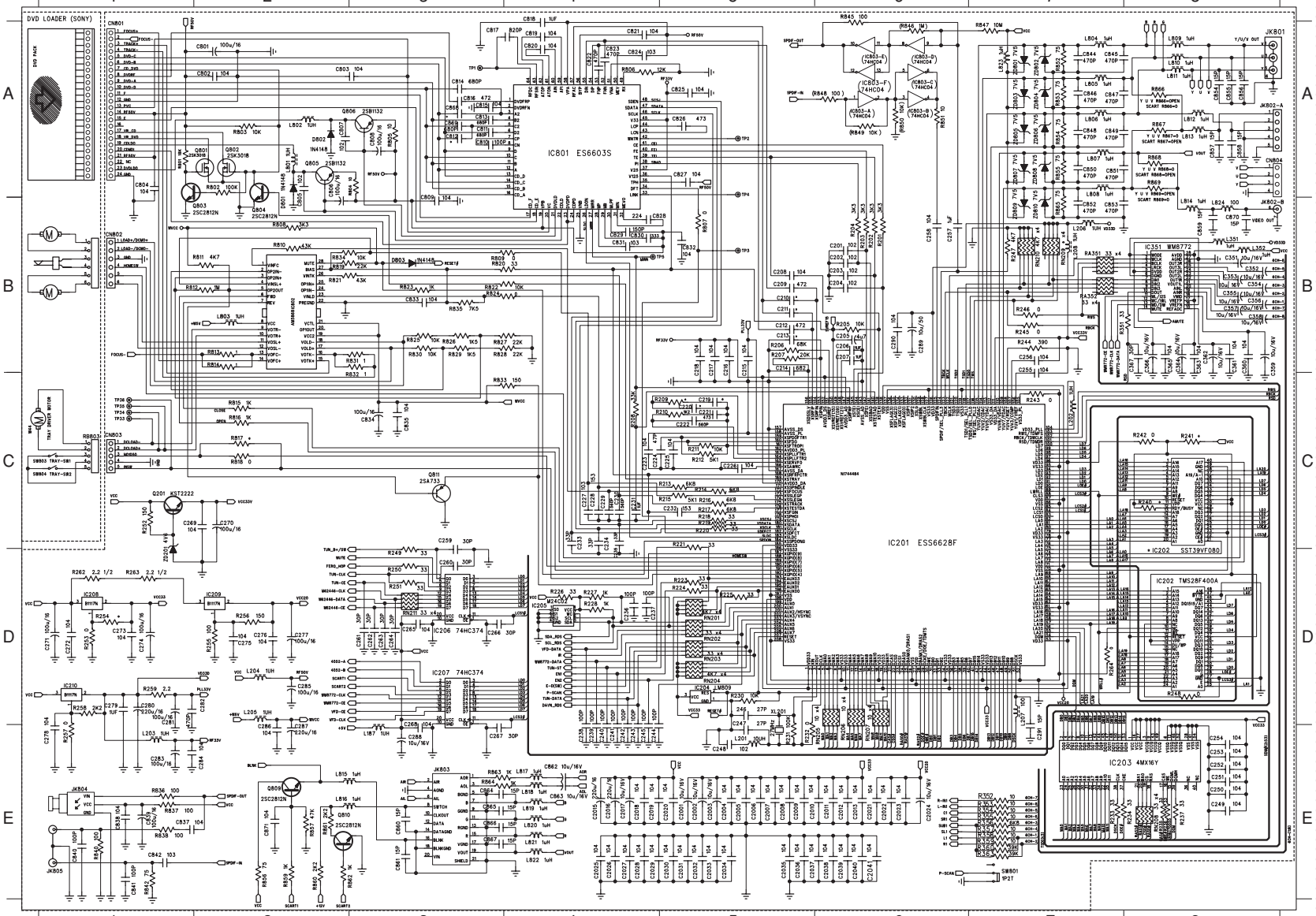
| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | 0.6 | 0 | 0 |

Q953 (2SB772P)

| Pin No. | 1 | 2 | 3 |
|---|---|---|---|
| Voltage | -12 | -24 | -13 |

8-3

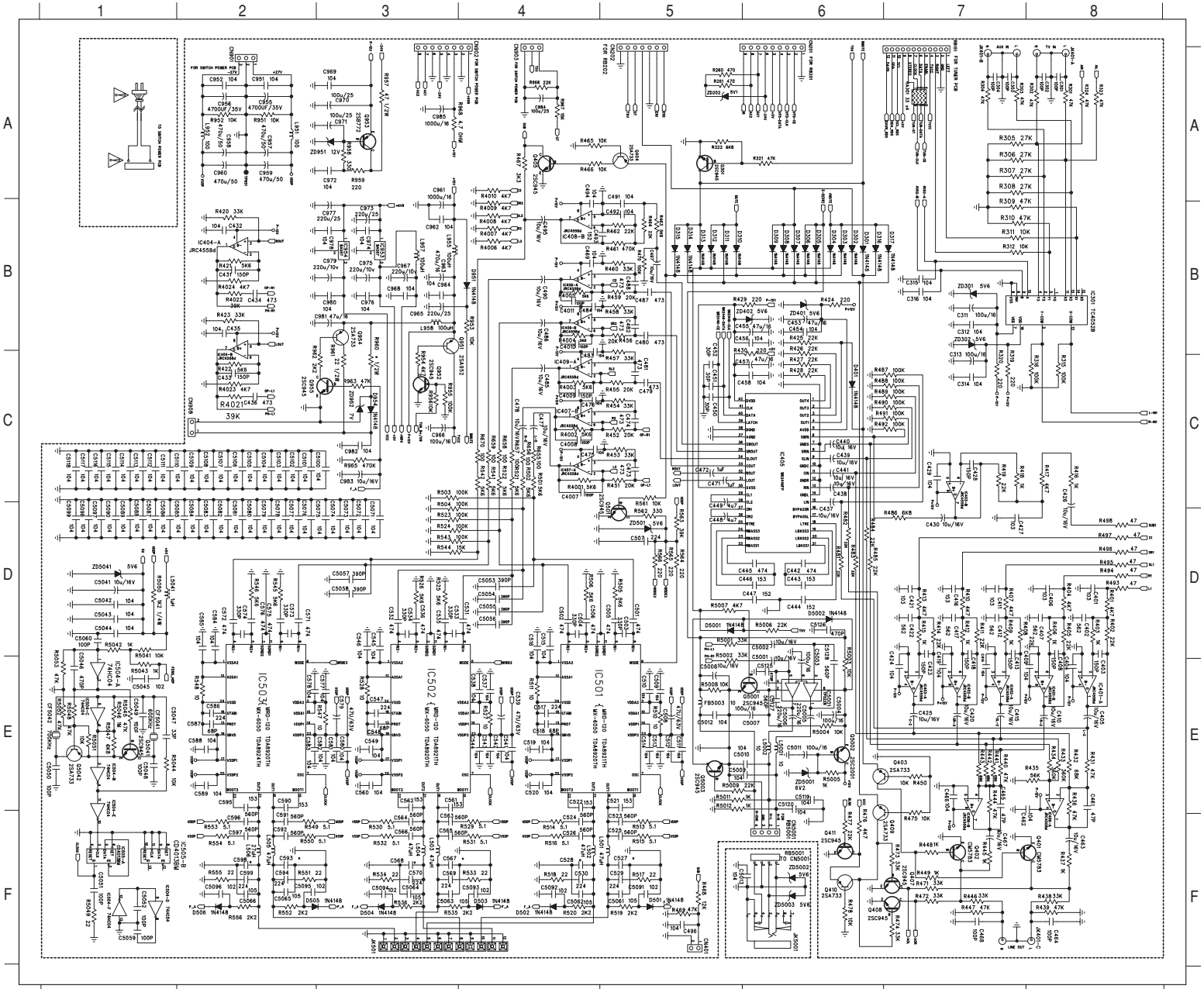
# CIRCUIT DIAGRAM (1)- MAIN BOARD




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| C201 | B6 | C801 | A2 | IC801 | A4 | R801 | A1 |
| C202 | B6 | C802 | A2 | IC802 | B2 | R802 | A2 |
| C203 | B6 | C803 | A3 | JK801 | A8 | R803 | A2 |
| C204 | B6 | C804 | A1 | JK802-A | A8 | R804 | A3 |
| C205 | B6 | C805 | B2 | JK802-B | B8 | R805 | A3 |
| C206 | B6 | C806 | A2 | JK805 | E1 | R806 | A4 |
| C207 | B6 | C807 | A2 | L187 | E3 | R807 | B5 |
| C208 | B5 | C808 | A3 | L201 | E5 | R808 | B2 |
| C209 | B5 | C809 | B3 | L202 | C7 | R809 | B2 |
| C212 | B5 | C810 | A3 | L203 | D1 | R810 | B2 |
| C214 | B5 | C811 | A3 | L204 | D2 | R811 | B2 |
| C215 | B5 | C812 | A3 | L205 | E2 | R812 | B2 |
| C216 | B5 | C813 | A3 | L206 | B7 | R813 | B2 |
| C217 | B5 | C814 | A3 | L207 | D7 | R814 | B2 |
| C218 | B5 | C815 | A3 | L351 | B8 | R815 | C2 |
| C221 | C5 | C816 | A3 | L352 | B8 | R816 | C2 |
| C222 | C5 | C817 | A4 | L801 | A2 | R818 | C2 |
| C223 | C4 | C818 | A4 | L802 | A2 | R819 | B2 |
| C224 | C4 | C819 | A4 | L803 | B2 | R820 | B3 |
| C225 | C5 | C820 | A4 | L804 | A7 | R821 | B2 |
| C226 | C5 | C821 | A4 | L805 | A7 | R822 | B3 |
| C227 | C4 | C822 | A4 | L806 | A7 | R823 | B3 |
| C228 | C4 | C823 | A4 | L807 | A7 | R824 | B3 |
| C229 | C4 | C824 | A4 | L808 | B7 | R825 | B3 |
| C230 | C4 | C825 | A5 | L809 | A8 | R826 | B3 |
| C231 | C4 | C826 | A5 | L810 | A8 | R827 | B3 |
| C232 | C5 | C827 | A5 | L811 | A8 | R828 | B4 |
| C233 | C4 | C828 | B4 | L812 | A8 | R829 | B3 |
| C234 | C4 | C830 | B4 | L813 | A8 | R830 | B3 |
| C235 | C4 | C831 | B4 | L814 | B8 | R831 | B3 |
| C236 | D4 | C832 | B5 | L823 | A7 | R832 | B3 |
| C237 | D4 | C833 | B3 | Q801 | A2 | R833 | C3 |
| C238 | D4 | C834 | C3 | Q802 | A2 | R834 | B2 |
| C239 | D4 | C835 | C3 | Q803 | B2 | R835 | B3 |
| C240 | D4 | C837 | E2 | Q804 | B2 | R838 | E1 |
| C241 | D4 | C840 | E1 | Q805 | A2 | R840 | E1 |
| C242 | D4 | C841 | E1 | Q806 | A3 | R845 | A6 |
| C243 | D4 | C844 | A7 | Q811 | C3 | R850 | A6 |
| C244 | D4 | C845 | A7 | R201 | B6 | R852 | A7 |
| C245 | D4 | C846 | A7 | R202 | B6 | R853 | A7 |
| C246 | D6 | C847 | A7 | R203 | B6 | R854 | A7 |
| C247 | D6 | C848 | A7 | R204 | B6 | R855 | A7 |
| C248 | E5 | C849 | A7 | R205 | B6 | R865 | B7 |
| C249 | E8 | C850 | A7 | R206 | B5 | RA351 | B7 |
| C250 | E8 | C851 | A7 | R207 | B5 | RA352 | B7 |
| C251 | E8 | C852 | B7 | R208 | C4 | RN201 | D6 |
| C252 | E8 | C853 | B7 | R210 | C5 | RN202 | D6 |
| C253 | E8 | C854 | A8 | R211 | C5 | RN203 | D6 |
| C254 | E8 | C855 | A8 | R212 | C5 | RN204 | D6 |
| C255 | B7 | C856 | A8 | R213 | C5 | RN205 | D6 |
| C256 | B7 | C857 | A8 | R214 | C5 | RN206 | D6 |
| C257 | B6 | C858 | A8 | R215 | C5 | RN207 | D6 |
| C259 | C3 | C859 | B8 | R216 | C5 | RN208 | E8 |
| C260 | D3 | C2001 | E5 | R217 | C5 | RN210 | B7 |
| C261 | D3 | C2002 | E5 | R218 | C5 | RN211 | D3 |
| C262 | D3 | C2003 | E5 | R219 | C5 | SW804 | C1 |
| C263 | D3 | C2004 | E5 | R220 | C5 | XL201 | E5 |
| C264 | D3 | C2005 | E5 | R221 | C5 | ZD801 | A7 |
| C265 | D3 | C2006 | E5 | R223 | D6 | ZD802 | A7 |
| C266 | D3 | C2007 | E5 | R224 | D6 | ZD803 | A7 |
| C267 | E3 | C2008 | E5 | R225 | D6 | ZD804 | A7 |
| C268 | D3 | C2009 | E6 | R226 | D4 | ZD805 | A7 |
| C269 | C2 | C2010 | E6 | R227 | D4 | ZD806 | A7 |
| C270 | C2 | C2011 | E6 | R228 | D4 | ZD807 | A7 |
| C271 | D1 | C2012 | E6 | R230 | D6 | ZD808 | A7 |
| C272 | D1 | C2013 | E6 | R231 | E5 | ZD809 | B7 |
| C273 | D1 | C2015 | E5 | R232 | D5 | ZD810 | B7 |
| C274 | D1 | C2016 | E5 | R233 | E7 | | |
| C275 | D2 | C2017 | E5 | R234 | E7 | | |
| C276 | D2 | C2018 | E5 | R235 | E8 | | |
| C277 | D2 | C2019 | E5 | R236 | E8 | | |
| C278 | E1 | C2020 | E5 | R237 | E8 | | |
| C279 | D1 | C2021 | E6 | R242 | C8 | | |
| C280 | D1 | C2022 | E6 | R243 | C7 | | |
| C281 | D1 | C2023 | E6 | R244 | B7 | | |
| C282 | D2 | C2024 | E6 | R245 | B7 | | |
| C283 | E1 | C2025 | E6 | R246 | B7 | | |
| C284 | E2 | C2026 | E6 | R247 | B7 | | |
| C285 | D2 | C2027 | E6 | R248 | D8 | | |
| C286 | E2 | C2028 | E6 | R249 | D8 | | |
| C287 | E2 | C2029 | E6 | R250 | D3 | | |
| C288 | E3 | C2030 | E6 | R251 | D3 | | |
| C289 | B6 | C2031 | E6 | R253 | D1 | | |
| C290 | B6 | C2032 | E6 | R255 | D2 | | |
| C351 | B8 | CN801 | A1 | R256 | D2 | | |
| C352 | B8 | CN802 | B1 | R257 | E1 | | |
| C353 | B8 | CN803 | C1 | R258 | D1 | | |
| C354 | B8 | D801 | B2 | R259 | D1 | | |
| C355 | B8 | D802 | A2 | R262 | D1 | | |
| C356 | B8 | D803 | B3 | R263 | D1 | | |
| C357 | B8 | IC201 | C6 | R351 | B7 | | |
| C358 | B8 | IC202 | C8 | R352 | E7 | | |
| C359 | B8 | IC203 | E7 | R353 | E7 | | |
| C360 | B8 | IC204 | D6 | R354 | E7 | | |
| C361 | B8 | IC205 | D4 | R355 | E7 | | |
| C362 | B8 | IC206 | D3 | R356 | E7 | | |
| C363 | B8 | IC207 | D3 | R357 | E7 | | |
| C364 | B8 | IC208 | D1 | R358 | E7 | | |
| C365 | B8 | IC209 | D2 | R359 | E7 | | |
| C366 | B8 | IC210 | D1 | R360 | E7 | | |
| C367 | B7 | IC351 | B8 | R363 | E7 | | |

8-4

# CIRCUIT DIAGRAM (2)- MAIN BOARD



| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C301 | A8 | C515 | D4 | C5005 | E6 | L502 | F4 | R481 | D6 | R5045 | D1 |
| C302 | A8 | C516 | D4 | C5006 | E6 | L503 | F3 | R482 | D6 | R5046 | D1 |
| C303 | A7 | C517 | E4 | C5007 | E5 | L504 | F3 | R483 | D6 | R5047 | E1 |
| C304 | A7 | C518 | E4 | C5008 | E5 | L505 | F2 | R484 | D6 | R5048 | D1 |
| C311 | A7 | C519 | E4 | C5009 | E5 | L506 | F2 | R485 | D6 | R5049 | F1 |
| C312 | B7 | C520 | E4 | C5010 | E6 | L951 | A2 | R486 | D7 | R5050 | D1 |
| C313 | C7 | C521 | F5 | C5011 | E6 | L952 | A2 | R487 | C7 | RA301 | A7 |
| C314 | C7 | C522 | E4 | C5012 | E5 | L955 | B3 | R488 | C7 | RB151 | A7 |
| C315 | B7 | C523 | F5 | C5041 | D1 | L957 | B3 | R489 | C7 | RB5001 | F6 |
| C316 | B7 | C523 | F5 | C5042 | D1 | L958 | B3 | R490 | C7 | ZD202 | A5 |
| C402 | D8 | C524 | F4 | C5043 | D1 | L5001 | E6 | R491 | C7 | ZD301 | B7 |
| C403 | E8 | C525 | F5 | C5044 | D1 | L5002 | E6 | R492 | C7 | ZD302 | B7 |
| C404 | E8 | C526 | F4 | C5045 | E1 | Q301 | A5 | R493 | D8 | ZD401 | B6 |
| C405 | E8 | C527 | F5 | C5046 | E1 | Q401 | F8 | R494 | D8 | ZD402 | B6 |
| C406 | D8 | C528 | F4 | C5047 | E1 | Q402 | F7 | R495 | D8 | ZD501 | D5 |
| C407 | E8 | C529 | F5 | C5048 | E1 | Q403 | F7 | R496 | D8 | ZD951 | A3 |
| C408 | E8 | C530 | F4 | C5049 | D1 | Q501 | D5 | R497 | D8 | ZD5001 | E6 |
| C409 | E8 | C531 | D4 | C5050 | E1 | Q951 | B4 | R498 | D8 | ZD5041 | D1 |
| C410 | E8 | C532 | D3 | C5051 | F1 | Q952 | C3 | R501 | C4 | | |
| C411 | D6 | C533 | D3 | C5052 | F1 | Q953 | A3 | R502 | C4 | | |
| C412 | D7 | C534 | D3 | C5053 | D4 | Q5001 | E5 | R503 | D3 | | |
| C413 | E7 | C535 | D3 | C5054 | D4 | Q5002 | E6 | R504 | D3 | | |
| C414 | E7 | C536 | D3 | C5055 | D4 | Q5003 | E5 | R505 | D5 | | |
| C415 | E7 | C537 | E4 | C5056 | D4 | Q5042 | E1 | R506 | D4 | | |
| C416 | D7 | C538 | E4 | C5057 | D3 | R260 | A5 | R510 | E5 | | |
| C417 | D7 | C539 | E4 | C5058 | D3 | R261 | A5 | R511 | E4 | | |
| C418 | E7 | C541 | E4 | C5059 | F1 | R301 | A8 | R513 | F5 | | |
| C419 | E7 | C542 | E4 | C5061 | F5 | R302 | A8 | R514 | F4 | | |
| C420 | E7 | C543 | E4 | C5062 | F4 | R303 | A7 | R515 | F5 | | |
| C421 | D7 | C544 | E4 | C5063 | F3 | R304 | A7 | R516 | F4 | | |
| C422 | D7 | C545 | D3 | C5064 | F3 | R305 | A7 | R517 | F5 | | |
| C423 | E7 | C546 | D3 | C5065 | F2 | R306 | A7 | R518 | F4 | | |
| C424 | E7 | C547 | E3 | C5066 | F2 | R307 | A7 | R521 | C4 | | |
| C425 | E7 | C548 | E3 | C5071 | D3 | R308 | A7 | R522 | C4 | | |
| C426 | C8 | C549 | E3 | C5072 | D3 | R309 | B7 | R523 | D3 | | |
| C427 | D7 | C560 | E3 | C5073 | D3 | R310 | B7 | R524 | D3 | | |
| C428 | C7 | C561 | F3 | C5074 | D3 | R311 | B7 | R525 | D3 | | |
| C429 | C7 | C562 | F3 | C5075 | D3 | R312 | B7 | R526 | D3 | | |
| C430 | D7 | C563 | F3 | C5076 | D2 | R315 | C8 | R527 | E4 | | |
| C431 | B2 | C564 | F3 | C5077 | D2 | R316 | C8 | R528 | E3 | | |
| C432 | B2 | C565 | F3 | C5078 | D2 | R319 | C7 | R529 | F4 | | |
| C433 | C2 | C566 | F3 | C5079 | D2 | R320 | C7 | R530 | F3 | | |
| C434 | B2 | C567 | F3 | C5080 | D2 | R321 | A6 | R531 | F4 | | |
| C435 | B2 | C568 | F3 | C5081 | D2 | R322 | A5 | R532 | F3 | | |
| C436 | C2 | C569 | F3 | C5082 | D2 | R323 | A8 | R533 | F4 | | |
| C437 | D6 | C570 | F3 | C5083 | C2 | R324 | A8 | R534 | F3 | | |
| C438 | C6 | C571 | D2 | C5084 | C2 | R401 | D8 | R541 | C4 | | |
| C439 | C6 | C572 | D2 | C5085 | C2 | R402 | D8 | R542 | C4 | | |
| C440 | C6 | C573 | D2 | C5086 | C2 | R403 | D8 | R543 | D3 | | |
| C441 | C6 | C574 | D2 | C5087 | C2 | R404 | D8 | R544 | D3 | | |
| C442 | D6 | C575 | D2 | CF5041 | D1 | R405 | D8 | R545 | D2 | | |
| C443 | D6 | C576 | D2 | CF5042 | E1 | R406 | D8 | R546 | D2 | | |
| C444 | D6 | C577 | E3 | CN201 | A6 | R407 | D7 | R547 | E3 | | |
| C445 | D6 | C578 | E2 | CN202 | A5 | R408 | D7 | R548 | E2 | | |
| C446 | D6 | C579 | E3 | CN901 | A2 | R409 | D7 | R549 | F2 | | |
| C447 | D6 | C580 | E3 | CN902 | A4 | R410 | D7 | R550 | F2 | | |
| C448 | D5 | C581 | E3 | CN903 | A4 | R411 | D7 | R551 | F2 | | |
| C449 | D5 | C582 | E3 | CN5001 | F6 | R412 | D7 | R553 | F2 | | |
| C453 | B6 | C583 | E2 | D301 | B6 | R413 | D7 | R554 | F2 | | |
| C454 | B6 | C584 | D2 | D302 | B6 | R414 | D7 | R555 | F2 | | |
| C455 | B6 | C585 | D2 | D303 | B6 | R415 | D7 | R561 | D5 | | |
| C456 | B6 | C586 | E2 | D304 | B6 | R416 | C8 | R562 | D5 | | |
| C457 | C6 | C587 | E2 | D305 | B6 | R417 | C8 | R563 | D5 | | |
| C458 | C6 | C588 | E2 | D306 | B6 | R418 | C7 | R564 | D5 | | |
| C461 | E8 | C589 | E2 | D307 | B6 | R419 | C7 | R565 | D5 | | |
| C462 | F8 | C590 | F2 | D308 | B6 | R420 | B2 | R566 | D5 | | |
| C463 | F8 | C591 | F2 | D309 | B6 | R421 | B2 | R655 | C4 | | |
| C464 | F8 | C592 | F2 | D310 | B5 | R422 | C2 | R656 | C4 | | |
| C465 | E7 | C593 | F2 | D311 | B5 | R423 | B2 | R657 | C4 | | |
| C466 | E7 | C594 | F2 | D312 | B5 | R424 | B6 | R658 | C4 | | |
| C467 | F7 | C595 | F2 | D313 | B5 | R425 | B6 | R659 | C4 | | |
| C468 | F7 | C596 | F2 | D314 | B5 | R426 | C6 | R670 | C4 | | |
| C469 | B4 | C597 | F2 | D315 | B5 | R427 | C6 | R951 | A2 | | |
| C471 | C5 | C598 | F2 | D316 | B6 | R428 | C6 | R952 | A2 | | |
| C472 | C5 | C599 | F2 | D951 | B4 | R429 | B6 | R953 | B4 | | |
| C473 | C5 | C951 | A2 | D5001 | D5 | R430 | C6 | R954 | C3 | | |
| C474 | C5 | C952 | A2 | D5002 | D6 | R431 | E8 | R955 | C3 | | |
| C475 | C4 | C955 | A2 | D5007 | D5 | R432 | E8 | R956 | C3 | | |
| C476 | C4 | C956 | A2 | FB5003 | E5 | R433 | E8 | R957 | A3 | | |
| C477 | C4 | C957 | A2 | IC301 | B8 | R434 | E8 | R958 | A3 | | |
| C478 | C4 | C958 | A2 | IC401-A | E8 | R435 | E8 | R959 | A3 | | |
| C479 | C5 | C959 | A2 | IC401-B | E8 | R436 | E8 | R966 | A4 | | |
| C480 | B5 | C960 | A2 | IC401-C | E7 | R437 | E8 | R967 | A4 | | |
| C481 | C5 | C961 | B3 | IC402-B | E7 | R438 | F8 | R968 | A3 | | |
| C482 | B5 | C962 | B3 | IC403-A | E7 | R439 | F8 | R4001 | C4 | | |
| C483 | C4 | C963 | B3 | IC404-A | B2 | R440 | E7 | R4002 | C4 | | |
| C484 | B4 | C964 | B3 | IC404-B | C2 | R441 | E7 | R4003 | C4 | | |
| C485 | C4 | C965 | B3 | IC405 | C6 | R442 | E7 | R4004 | B4 | | |
| C486 | B4 | C966 | B3 | IC406 | F8 | R443 | E7 | R4005 | B4 | | |
| C487 | B5 | C967 | B3 | IC407 | C4 | R444 | E7 | R4006 | B4 | | |
| C487 | C4 | C968 | B3 | IC408-A | B4 | R445 | F7 | R4007 | B4 | | |
| C488 | B5 | C969 | A3 | IC408-B | B4 | R446 | F7 | R4008 | B4 | | |
| C490 | B4 | C970 | A3 | IC409-A | C4 | R447 | F7 | R4009 | B4 | | |
| C491 | B5 | C971 | A3 | IC501 | E4 | R448 | F7 | R4010 | B4 | | |
| C492 | B5 | C972 | A3 | IC502 | E3 | R449 | F7 | R4021 | C2 | | |
| C493 | B4 | C973 | B3 | IC503 | E2 | R450 | E7 | R4022 | B2 | | |
| C494 | A4 | C974 | B3 | IC504-A | E1 | R451 | C5 | R4023 | C2 | | |
| C495 | B4 | C975 | B3 | IC504-B | E1 | R452 | C5 | R4024 | B2 | | |
| C497 | B5 | C976 | B3 | IC504-C | E1 | R453 | C5 | R5001 | D5 | | |
| C501 | D5 | C977 | B3 | IC504-E | E1 | R454 | C5 | R5002 | E5 | | |
| C502 | D4 | C978 | B3 | IC505-A | F1 | R455 | C5 | R5003 | E6 | | |
| C503 | D5 | C979 | B3 | IC505-B | F1 | R456 | B5 | R5004 | E6 | | |
| C504 | D4 | C980 | B3 | IC505-D | F1 | R457 | C5 | R5005 | E6 | | |
| C505 | D5 | C984 | A4 | IC505-F | F1 | R458 | B5 | R5006 | D6 | | |
| C506 | D4 | C4007 | C4 | IC953 | B3 | R459 | B5 | R5007 | D5 | | |
| C507 | D5 | C4008 | C4 | IC954 | B3 | R460 | B5 | R5008 | E5 | | |
| C508 | E5 | C4009 | C4 | IC5001 | E6 | R461 | B5 | R5009 | E5 | | |
| C509 | E5 | C4010 | B4 | JK401-A | A8 | R462 | B5 | R5011 | E5 | | |
| C510 | E5 | C4011 | B4 | JK401-B | A7 | R463 | B5 | R5012 | F5 | | |
| C511 | E5 | C5001 | E6 | JK401-C | A7 | R464 | B5 | R5041 | E1 | | |
| C512 | E5 | C5002 | D6 | JK501 | F3 | R470 | B5 | R5042 | D1 | | |
| C513 | E5 | C5003 | D6 | JK5001 | F6 | R471 | F7 | R5043 | E1 | | |
| C514 | E5 | C5004 | E6 | L501 | F5 | R472 | F7 | R5044 | E1 | | |

8-5

# PCB LAYOUT - MAIN BOARD (TOP)

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8-6

## PCB LAYOUT - MAIN BOARD (BOTTOM)

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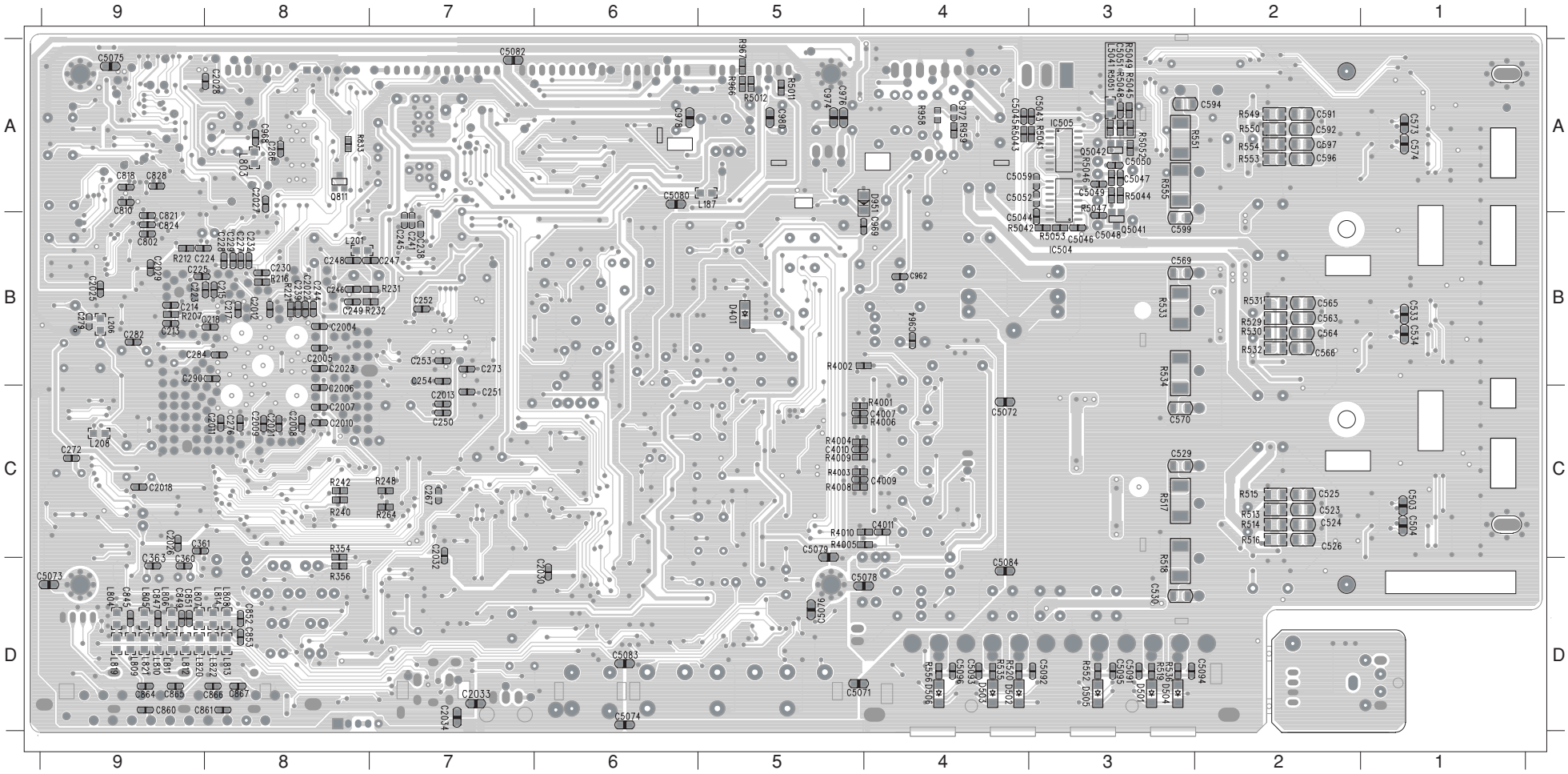
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C214 | B9 | C239 | B8 | C267 | C7 | C504 | C1 | C569 | B3 | C821 | B9 | C972 | A4 | C2012 | B8 | C4007 | C4 | C5052 | A4 | C5084 | D4 | L808 | D8 | R221 | B8 | R529 | B2 | R958 | A4 | R5011 | A5 |
| C215 | B8 | C241 | B7 | C272 | C9 | C523 | C2 | C570 | C3 | C824 | B9 | C974 | A5 | C2013 | C7 | C4009 | C4 | C5059 | A4 | D951 | A4 | L809 | D9 | R231 | B7 | R530 | B2 | R959 | A4 | R5012 | A5 |
| C217 | B8 | C244 | B8 | C273 | B7 | C524 | C2 | C573 | A1 | C828 | A9 | C976 | A5 | C2018 | C9 | C4010 | C5 | C5071 | D5 | IC504 | B3 | L810 | D9 | R232 | B7 | R531 | B2 | R966 | A5 | R5041 | A3 |
| C218 | B8 | C245 | B7 | C276 | C8 | C525 | C2 | C574 | A1 | C845 | D9 | C978 | A6 | C2021 | C8 | C4011 | C4 | C5072 | C4 | IC505 | A3 | L811 | D9 | R242 | C8 | R532 | B2 | R967 | A5 | R5042 | B3 |
| C223 | B8 | C246 | B8 | C279 | B9 | C526 | C2 | C591 | A2 | C847 | D9 | C980 | A5 | C2022 | B8 | C5043 | A1 | C5073 | D9 | L187 | A5 | L812 | D9 | R248 | C7 | R533 | B3 | R4001 | C4 | R5043 | A4 |
| C224 | B8 | C247 | B7 | C282 | B9 | C529 | C3 | C592 | A2 | C849 | D9 | C2004 | B8 | C2023 | B8 | C5044 | A4 | C5074 | D6 | L201 | B8 | L813 | D8 | R354 | C8 | R534 | B3 | R4002 | B5 | R5044 | A3 |
| C225 | B9 | C248 | B8 | C284 | B8 | C530 | D3 | C594 | A2 | C851 | D9 | C2005 | B8 | C2025 | B9 | C5045 | A4 | C5075 | A9 | L206 | B9 | L814 | D8 | R356 | D8 | R549 | A2 | R4003 | C5 | R5045 | A3 |
| C227 | B8 | C249 | B8 | C286 | A8 | C533 | B1 | C596 | A2 | C852 | D8 | C2006 | C8 | C2026 | C9 | C5046 | B3 | C5076 | D5 | L208 | C9 | Q5041 | B3 | R513 | C2 | R550 | A2 | R4004 | C5 | R5046 | A3 |
| C228 | B8 | C250 | C7 | C290 | B8 | C534 | B1 | C597 | A2 | C853 | D8 | C2007 | C8 | C2027 | A8 | C5047 | A3 | C5078 | D5 | L803 | A8 | Q5042 | A3 | R514 | C2 | R551 | A3 | R4005 | C5 | R5047 | B3 |
| C229 | B8 | C251 | C7 | C360 | D9 | C563 | B2 | C599 | B3 | C962 | B4 | C2008 | C8 | C2028 | A8 | C5048 | B3 | C5079 | C5 | L804 | D9 | Q811 | A8 | R515 | C2 | R553 | A2 | R4006 | C4 | R5048 | A3 |
| C230 | B8 | C252 | B7 | C361 | C8 | C564 | B2 | C802 | B9 | C964 | B4 | C2009 | C8 | C2029 | B9 | C5049 | A3 | C5080 | A6 | L805 | D9 | R207 | B9 | R516 | C2 | R554 | A2 | R4008 | C5 | R5049 | A3 |
| C232 | B8 | C253 | B7 | C363 | D9 | C565 | B2 | C810 | B9 | C968 | A8 | C2010 | C8 | C2030 | D6 | C5050 | A3 | C5082 | A7 | L806 | D9 | R212 | B9 | R517 | C3 | R555 | A3 | R4009 | C5 | | |
| C238 | B7 | C254 | C7 | C503 | C1 | C566 | B2 | C818 | A9 | C969 | B4 | C2011 | C8 | C2032 | C7 | C5051 | A3 | C5083 | D6 | L807 | D8 | R216 | B8 | R518 | D3 | R833 | A8 | R4010 | C5 | | |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8-7

## ELECTRICAL PARTS LIST - MAIN BOARD

ELECTRICAL PARTS LIST - MAIN BOARD

### MISCELLANEOUS

| | | |
|---|---|---|
| C837 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| CF5041 | 9965 000 23595 | RESONATOR 2P 600kHz |
| CF5042 | 9965 000 23596 | RESONATOR 2P 700kHz |
| CN801 | 9965 000 25152 | CHIP CONNECTOR 24P P=0.5mm |
| CN901 | 9965 000 25151 | CONNECTOR 3P CL3962WVO |
| CN902 | 9965 000 25149 | CONNECTOR B8B-XH-A 8P |
| FB5003 | 9965 000 19426 | CHIP INDUCTOR 10uH 10% |
| JK401 | 9965 000 24074 | RCA JACK 6P WHTx3/REDx3 AXIAL |
| JK501 | 9965 000 25157 | SPK JACK 12P PUSH TERMINAL |
| JK801 | 9965 000 23598 | RCA JACK 3P RED/BLU/GRN |
| JK802 | 9965 000 25153 | RCA+DIN JK 1RCA+4P DIN YEL |
| JK805 | 9965 000 25156 | RCA JACK 1P BLACK W/GND PIN |
| JK5002 | 9965 000 25154 | PHONE JACK D3.5 9P NICKEL |
| L187 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L201 | 9965 000 19426 | CHIP INDUCTOR 10uH 10% |
| L202 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L203 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L204 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L205 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L206 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L207 | 9965 000 23891 | CHIP BEAD 60 OHM 100MHz 25% |
| L208 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L351 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L352 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L501 | 9965 000 23892 | INDUCTOR 47uH 20% 4.3A |
| L502 | 9965 000 23892 | INDUCTOR 47uH 20% 4.3A |
| L503 | 9965 000 23892 | INDUCTOR 47uH 20% 4.3A |
| L504 | 9965 000 23892 | INDUCTOR 47uH 20% 4.3A |
| L505 | 9965 000 23892 | INDUCTOR 47uH 20% 4.3A |
| L506 | 9965 000 23893 | INDUCTOR 33uH 20% 6A |
| L801 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L802 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L803 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L804 | 9965 000 23895 | CHIP INDUC 2.4uH 5% |
| L805 | 9965 000 23895 | CHIP INDUC 2.4uH 5% |
| L806 | 9965 000 23895 | CHIP INDUC 2.4uH 5% |
| L807 | 9965 000 23895 | CHIP INDUC 2.4uH 5% |
| L808 | 9965 000 23895 | CHIP INDUC 2.4uH 5% |
| L809 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L810 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L811 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L812 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L813 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L814 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L823 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| L951 | 9965 000 12470 | BEAD FERITE 100 OHM/AT 100MHz |
| L952 | 9965 000 12470 | BEAD FERITE 100 OHM/AT 100MHz |
| L955 | 9965 000 15931 | INDUCTOR 100 uH 10% |
| L957 | 9965 000 15931 | INDUCTOR 100 uH 10% |
| L958 | 9965 000 16694 | INDUCTOR 6uH 13.5Ts 2UEW |
| L5001 | 9965 000 19426 | CHIP INDUCTOR 10uH 10% |
| L5002 | 9965 000 19426 | CHIP INDUCTOR 10uH 10% |
| L5041 | 9965 000 23594 | CHIP INDUC 1uH 10% |
| SW801 | 9965 000 25161 | SW SLIDE 1P2T 3P L=2.5mm |
| XL201 | 9965 000 23602 | CRYSTAL 27MHz HC-49/S +/-20PPM |

### CAPACITORS

| | | |
|---|---|---|
| C508 | 9965 000 24680 | COND ELECT 47uF 63V 20% |
| C511 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C512 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C523 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C524 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C525 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C526 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C527 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C528 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C539 | 9965 000 24680 | COND ELECT 47uF 63V 20% |
| C541 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C542 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C563 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C564 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C565 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C566 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C567 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C568 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C579 | 9965 000 24680 | COND ELECT 47uF 63V 20% |
| C580 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C581 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C591 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C592 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C593 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C596 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C597 | 9965 000 23896 | CHIP CAP 560pF 100V 10% |
| C598 | 9965 000 23605 | COND MYLAR 0.01uF 100V 5% |
| C951 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C952 | 9965 000 23603 | CHIP CAP 0.1uF 100V 20% |
| C955 | 5322 124 22614 | 1000uF 20% 50V |
| C956 | 5322 124 22614 | 1000uF 20% 50V |
| C961 | 9965 000 23606 | COND ELECT 1000uF 16V 20% 85'C |

### RESISTORS

| | | |
|---|---|---|
| R262 | 9965 000 24681 | RESISTOR 2.2 OHM 1 W 5% MF HI |
| R263 | 9965 000 24681 | RESISTOR 2.2 OHM 1 W 5% MF HI |
| R513 | 4822 051 10518 | 5R1 5% 0,25W |
| R514 | 4822 051 10518 | 5R1 5% 0,25W |
| R515 | 4822 051 10518 | 5R1 5% 0,25W |
| R516 | 4822 051 10518 | 5R1 5% 0,25W |
| R517 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R518 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R529 | 4822 051 10518 | 5R1 5% 0,25W |
| R530 | 4822 051 10518 | 5R1 5% 0,25W |
| R531 | 4822 051 10518 | 5R1 5% 0,25W |
| R532 | 4822 051 10518 | 5R1 5% 0,25W |
| R533 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R534 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R549 | 4822 051 10518 | 5R1 5% 0,25W |
| R550 | 4822 051 10518 | 5R1 5% 0,25W |
| R551 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R553 | 4822 051 10518 | 5R1 5% 0,25W |
| R554 | 4822 051 10518 | 5R1 5% 0,25W |
| R555 | 9965 000 23608 | CHIP RES 22 OHM 1/2W 5% |
| R957 | 9965 000 23609 | RESISTOR 47 OHM 1/2 W 5% CF |
| R968 | 9965 000 23610 | RESISTOR 1 OHM 1/4W 5% |
| RA301 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RA351 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RA352 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RN201 | 9965 000 23613 | RES ARRAY 4x4.7k 1/16W 5% |
| RN202 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RN203 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RN204 | 9965 000 23613 | RES ARRAY 4x4.7k 1/16W 5% |
| RN205 | 9965 000 23614 | CHIP ARRAY 10Rx4 1/16 W 5% |
| RN206 | 9965 000 23614 | CHIP ARRAY 10Rx4 1/16 W 5% |
| RN207 | 9965 000 23614 | CHIP ARRAY 10Rx4 1/16 W 5% |
| RN208 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |
| RN210 | 9965 000 23613 | RES ARRAY 4x4.7k 1/16W 5% |
| RN211 | 9965 000 23612 | RES ARRAY 4x33R 1/16W 5% |

### DIODES

| | | |
|---|---|---|
| D301 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D302 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D303 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D304 | 4822 130 34233 | BZX79-B5V1 |
| D305 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D306 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D307 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D308 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D309 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D310 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D311 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D312 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D313 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D314 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D315 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D316 | 4822 130 34233 | BZX79-B5V1 |
| D801 | 4822 130 83338 | CHIP DIODE LL4148 |
| D802 | 4822 130 83338 | CHIP DIODE LL4148 |
| D803 | 4822 130 83338 | CHIP DIODE LL4148 |
| D951 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D5001 | 9965 000 19409 | DIODE CHIP BAV16W/IN4148W |
| D5002 | 4822 130 34233 | BZX79-B5V1 |
| ZD202 | 4822 130 34233 | BZX79-B5V1 |
| ZD301 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD302 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD401 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD402 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD501 | 9965 000 19397 | CHIP ZENER 5.6V 5% 0.5W |
| ZD801 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD802 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD803 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD804 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD805 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD806 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD807 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD808 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD809 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD810 | 9965 000 19431 | CHIP ZENER 7.5V 5% 0.5W |
| ZD951 | 9965 000 17375 | DIODE ZENR 11.9-12.4V 0.5W |
| ZD5001 | 4822 130 34167 | BZX79-B6V2 |

### TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|---|---|---|
| Q301 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q401 | 9965 000 20286 | XISTR NPN CM5783GR SOT23 |
| Q402 | 9965 000 20286 | XISTR NPN CM5783GR SOT23 |
| Q403 | 9965 000 14175 | 2SA733Q,P |
| Q501 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q801 | 3141 018 51690 | FET 2SK3018 |
| Q802 | 3141 018 51690 | FET 2SK3018 |
| Q803 | 9965 000 19393 | XISTR NPN 2SC2812N 2204 |
| Q804 | 9965 000 19393 | XISTR NPN 2SC2812N 2204 |
| Q805 | 9965 000 21008 | XISTR PNP 2SB1132RT100 ROHM |
| Q806 | 9965 000 21008 | XISTR PNP 2SB1132RT100 ROHM |
| Q811 | 9965 000 14175 | 2SA733Q,P |
| Q951 | 4822 130 10211 | XISTR PNP 2SA952 |
| Q952 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q953 | 4822 130 10358 | 2SB772P/Q |
| Q5001 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q5002 | 4822 130 41651 | XISTR NPN 2SC2001L |
| Q5003 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q5041 | 9965 000 20268 | XISTR NPN SMT TYPE (2SC1623) |
| Q5042 | 9965 000 14175 | 2SA733Q,P |
| IC201 | 9965 000 24682 | IC 208 PIN ES6629FD PQFP ESS |
| IC202 | 9965 000 23615 | IC 48 PIN M29LV1600T70 TSOP |
| IC203 | 9940 000 00029 | IC 54 PIN SD41620HGT-6 TSOP |
| IC204 | 9965 000 15890 | IC 3 PIN IMP809SEUR-T SOT23 |
| IC205 | 9965 000 23616 | IC 8 PIN M24C02-MN6T ST SD8 |
| IC206 | 9965 000 20293 | IC 20 PIN 74F374D |
| IC207 | 9965 000 20293 | IC 20 PIN 74F374D |
| IC208 | 9965 000 23617 | IC 3P B1117N 3.3V BAY-LINEAR 1A |
| IC209 | 9965 000 23617 | IC 3P B1117N 3.3V BAY-LINEAR 1A |
| IC210 | 9965 000 23617 | IC 3P B1117N 3.3V BAY-LINEAR 1A |
| IC301 | 9965 000 23619 | IC 16 PIN CD4052BM SOIC TI |
| IC351 | 9965 000 20295 | IC 28 PIN WM8772 TSOP WOLFSON |
| IC401 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC402 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC403 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC404 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC405 | 9965 000 12514 | IC 42 PIN M62446FP |
| IC406 | 9965 000 15886 | IC 8 PIN RC4558D |

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## *ELECTRICAL PARTS LIST - MAIN BOARD*

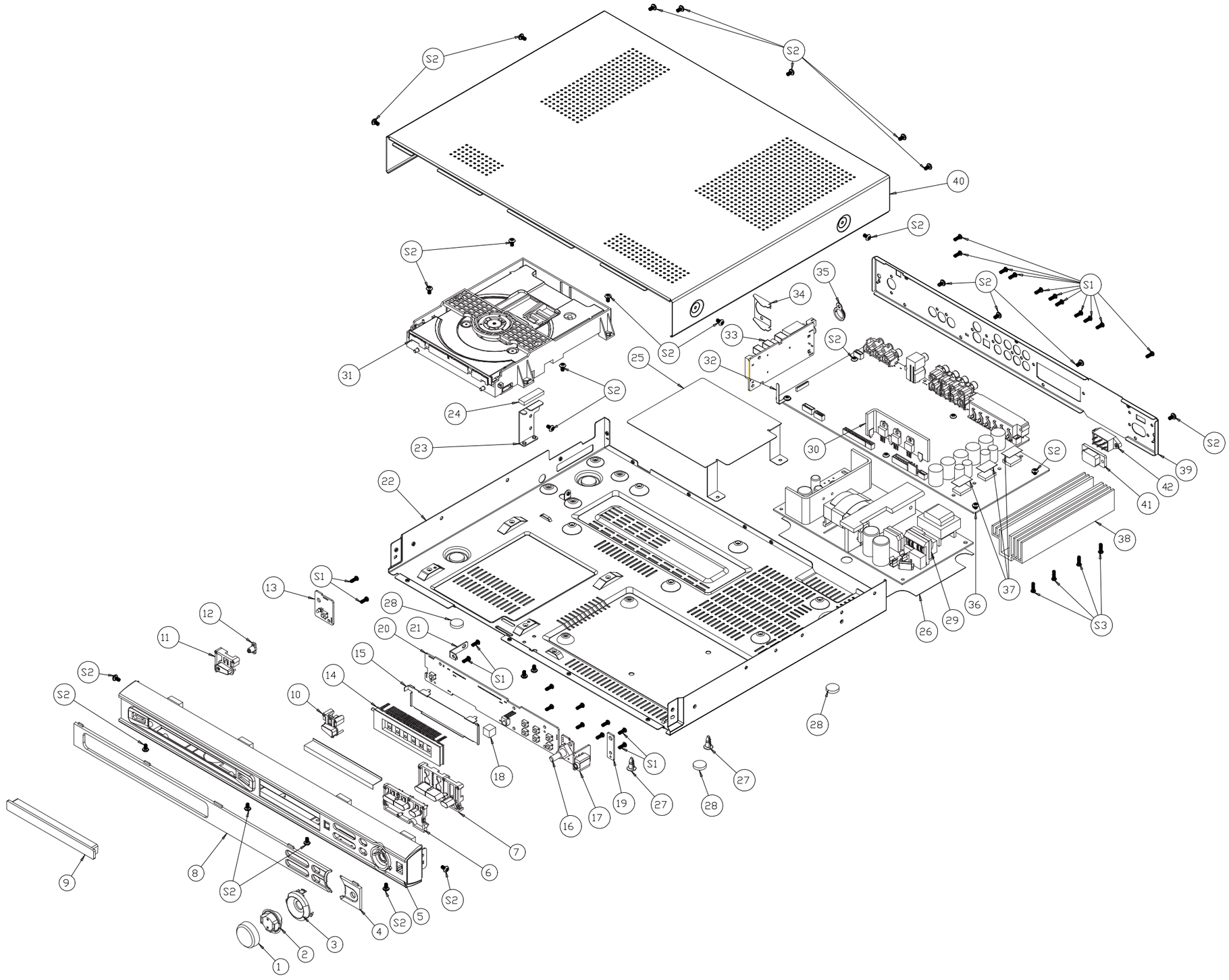
TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|---|---|---|
| IC407 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC408 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC409 | 9965 000 15886 | IC 8 PIN RC4558D |
| IC501 | 9965 000 23618 | IC 24PIN TDA8921TH HSOP24 |
| IC502 | 9965 000 23618 | IC 24PIN TDA8921TH HSOP24 |
| IC503 | 9965 000 23618 | IC 24PIN TDA8921TH HSOP24 |
| IC504 | 9965 000 22230 | IC 14 PIN 74LVC04AD |
| IC505 | 9965 000 22229 | IC 14 PIN HEF4013BT |
| IC801 | 9965 000 21182 | IC 64 PIN ES6603S LQFP ESS |
| IC802 | 9965 000 23620 | IC 28 PIN AM5868S HSOP AMTEK |
| IC953 | 9965 000 12512 | IC 3 PIN BA05T TO220FP ROHM |
| IC954 | 9965 000 12512 | IC 3 PIN BA05T TO220FP ROHM |
| IC5001 | 9965 000 23621 | IC 8P APA3541 SOP-8 HEADPHONE |

Note : Only the parts mentioned in this list are normal service spare parts.

9-1

# MECHANICAL EXPLODED VIEW



## MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

| | | | |
|---|---|---|---|
| | 9965 000 24683 | | MAIN+PH JACK+PH BKT+RGB PCBA |
| | 9965 000 24684 | | CONTROL PCB ASSY |
| | 9965 000 24658 | | RADIO (TUNER) PCB ASSY |
| 1 | 9965 000 23639 | | VOLUME KNOB |
| 2 | 9965 000 23640 | | VOLUME DOCKING |
| 3 | 9965 000 23641 | | VOLUME RING |
| 4 | 9965 000 23642 | | VOLUME KNOB LENS |
| 5 | 9965 000 24685 | | FRONT PANNEL |
| 6 | 9965 000 23644 | | FUNCTION BUTTON 1 |
| 7 | 9965 000 23645 | | FUNCTION BUTTON 2 |
| 8 | 9965 000 23646 | | DISPLAY LENS |
| 9 | 9965 000 23647 | | DVD DOOR |
| 10 | 9965 000 23648 | | OPEN/CLOSE BUTTON |
| 11 | 9965 000 23649 | | POWER BUTTON |
| 12 | 9965 000 23650 | | POWER LED LENS |
| 27 | 9965 000 23651 | | SPACER PCB |
| 28 | 9965 000 23571 | | FOOT RUBBER |
| 29 | 9965 000 25165 | | SW PWR SUP ASSY INPUT 110~230V |
| 31 | 9965 000 23573 | | DVD MECH. LOADER ASSY |
| 35 | 9965 000 23575 | | ANTENNA HOLDER |
| 41 | 9965 000 20576 | ⚠ | AC SOCKET SO-222-PC-S(TECX) |
| 42 | 9965 000 16339 | | SWITCH SLIDE 6 PIN SL14-22AH |
| | 9965 000 25159 | | SATELLITE SPEAKER ASSY 30Wx5 |
| | 9965 000 25160 | | SUBWOOFER ASSY 50W |
| | 9965 000 23578 | | FFC WIRE 24P L=150mm P=0.5mm |
| | 9965 000 24688 | ⚠ | LINE CORD |
| | 9965 000 23580 | | RCA CABLE (VIDEO CABLE) |
| | 9965 000 23889 | | RCA CABLE (AUDIO CABLE) |
| | 9965 000 23582 | | LOOP ANTENNA |
| | 9965 000 23583 | | FM ANTENNA |
| | 9965 000 23656 | | REMOTE CONTROL |
| | 9965 000 25158 | | CONVERSION PLUG SAA TO 2 FLAT PIN |
| | 9965 000 25163 | | BEAD FERIT OD28xID16xH20mm BLK |

## SATELLITE SPEAKER ASSY BREAKDOWN

| | | |
|---|---|---|
| 9965 000 24689 | | SPEAKER BOX FRONT-L |
| 9965 000 24690 | | SPEAKER BOX FRONT-R |
| 9965 000 24691 | | SPEAKER BOX REAR-L |
| 9965 000 24692 | | SPEAKER BOX REAR-R |
| 9965 000 24693 | | SPEAKER BOX CENTER |
| 9965 000 23627 | | RUBBER FOOT |

Note : Only the parts mentioned in this list are normal service spare parts.

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## SCREW LISTS - MAIN UNIT

| | |
|---|---|
| S1 | D3 x 8 |
| S2 | M3 x 6 |
| S3 | D3 x 10 |

# POWER BOARD

## *(For Information only)*

It is not recommended for component repair on this board but to replace the board when it becomes defective.
Therefore no service parts list is published in this chapter.

The only service part available for replacement is:
SW PWR SUP ASSY INPUT 110 ~ 230V ..... 9965 000 25165

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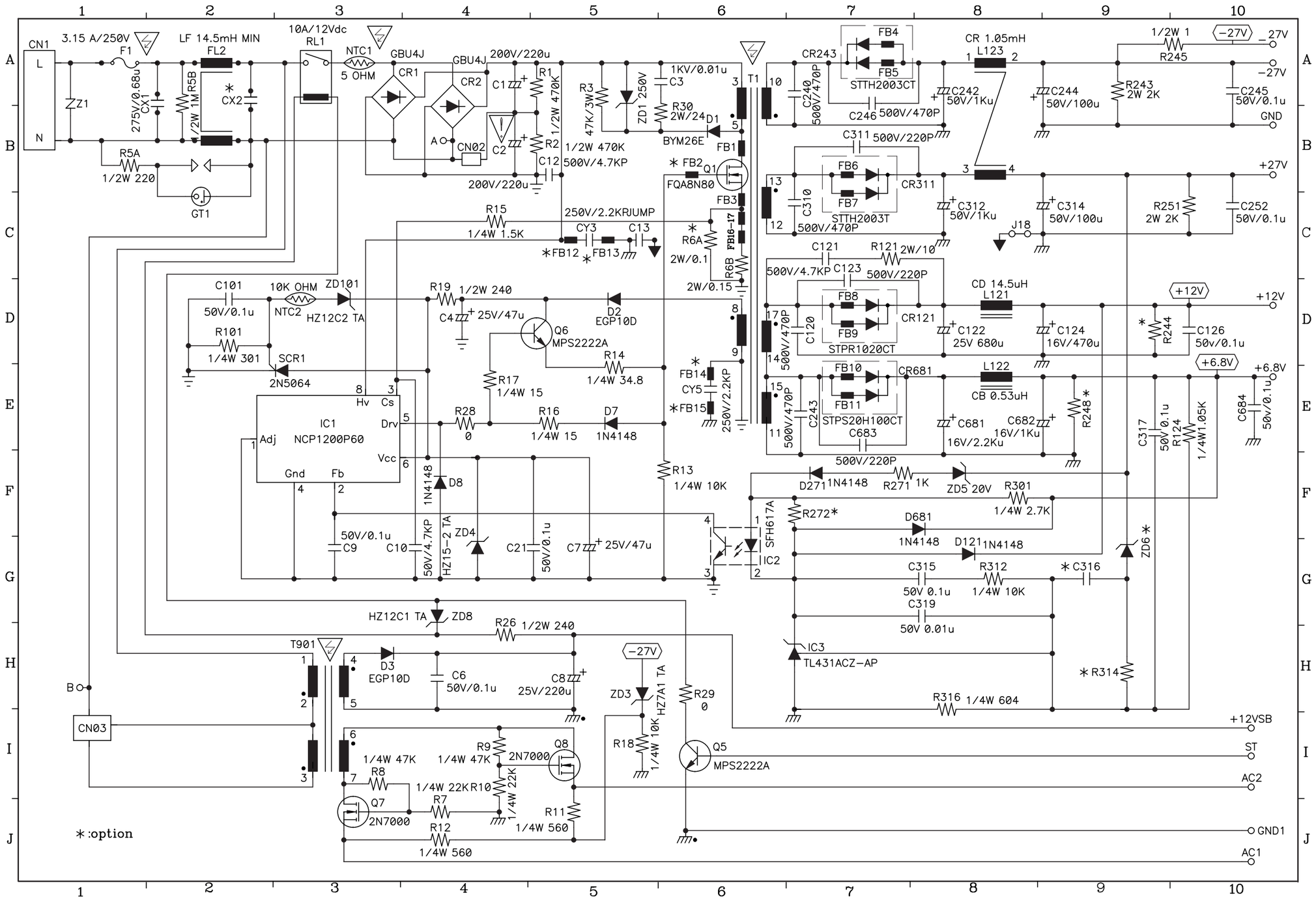
## CIRCUIT DIAGRAM - POWER BOARD ( /78)



10-3

## PCB LAYOUT - POWER BOARD ( /78)